CDP-195/295/491

SERVICE MANUAL

US Model
CDP-195/491
Canadian Model
AEP Model
E Model
CDP-195/295
UK Model
CDP-491
Australian Model
CDP-295

SONY
HIGH DENSITY LINEAR CONVERTER
NEW
COMPACT DISC PLAYER CDP-295

Photo : CDP-295

Model Name Using Similar Mechanism	CDP-291/391
CD Mechanism Type	CDM14-5BD1
Optical Pick-Up Block Type	BU-5BD1

SPECIFICATIONS

Compact disc player

Frequency response	2 Hz – 20 kHz ± 0.5 dB
Signal to noise ratio	More than 100 dB
Dynamic range	More than 97 dB
Harmonic distortion	Less than 0.005%
Channel separation	More than 95 dB

Outputs

LINE OUT (phono jacks)	Output level 2 V (at 50 kilohms) Load impedance over 10 kilohms
PHONES (stereo phone jack)	Output level max. 10 mW Load impedance 32 ohms

General

	CDP-195/295/491
Power requirements	Model for Continental Europe 220 – 230 V AC, 50/60 Hz Model for Canada 120 V AC, 60 Hz Model for Australia 240 V AC, 50 Hz Model for other countries 110, 120, 220 or 240 V AC, adjustable, 50/60 Hz
Power consumption	12 W
Dimensions (approx., including projections)	430 × 100 × 280 mm (w/h/d) (17 × 4 × $11^{1}/_{8}$ inches)
Weight (approx.)	3.5 kg (7 lbs 12 oz)

Supplied accessories

Audio cord		1 (2 phono plugs – 2 phono plugs)
Remote commander	(CDP-295/491)	1
R6(size AA) batteries	(CDP-295/491)	2
AC plug adaptor (for some areas)		1

Remote commander RM-D295 (CDP-295/491)

Remote control system	Infrared control
Power requirements	3 V DC with two R6 (size AA) batteries
Dimensions	Approx. 40 × 20 × 175 mm (w/h/d) ($1^{3}/_{4}$ × $^{13}/_{16}$ × 7 inches)
Weight	Approx. 95 g (4 oz) Including batteries

Design and specifications subject to change without notice.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

This Compact Disc player is classified as a CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT label is located on the rear exterior.

MICROFILM

COMPACT DISC PLAYER

SONY®

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT
À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

1. Laser Diode Properties
   - Material: GaAlAs
   - Wavelength: 780nm
   - Emission Duration: continuous
   - Laser Output: max.44.6μW*

   * This output is the value measured at a distance of about 200mm from the objective lens surface on the Optical Pick-up Block.

2. During service, do not take the Optical Pick-up Block apart, and do not adjust the APC circuit. If there is a breakdown in the APC circuit (including laser diode), replace the entire Optical Pick-up Block (including APC borad).

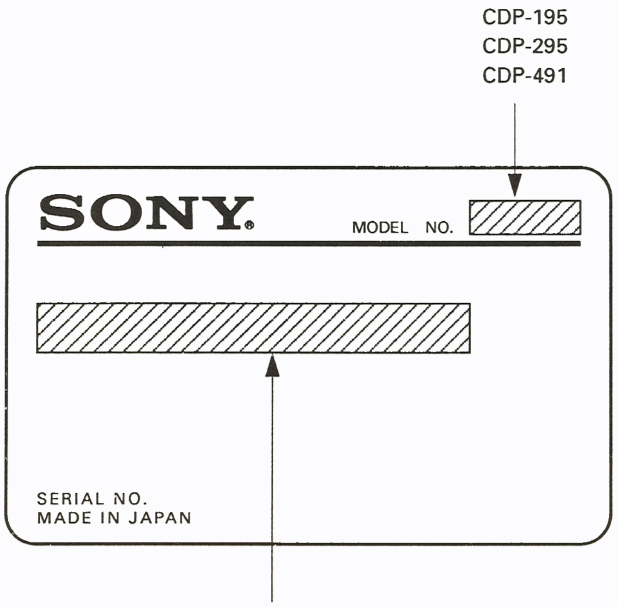
TABLE OF CONTENTS

Section Title Page

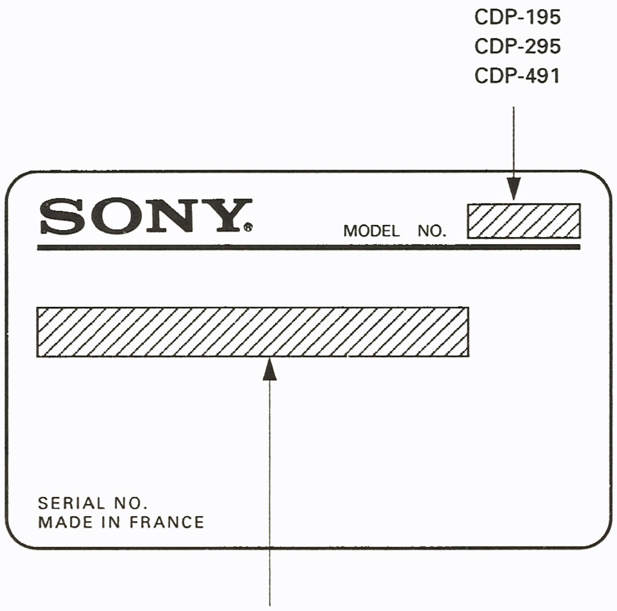
1. GENERAL 4
   Location of Controls 4
2. ELECTRICAL BLOCK CHECKING 5
3. DISASSEMBLY OF BASE UNIT 7
4. DIAGRAMS 8
   4-1. Pin Function of IC101 and IC401 8
   4-2. Block Diagram 10
   4-3. Waveforms 13
   4-4. Printing Wiring Boards 14
   4-5. Schematic diagram 17
   4-6. Semiconductor Lead Layouts 21
   4-7. IC Block Diagrams 22
5. EXPLODED VIEWS 24
6. ELECTRICAL PARTS LIST 28

MODEL IDENTIFICATION

– SPECIFICATION LABEL –


CDP-195
CDP-295
CDP-491
SONY
MODEL NO.
SERIAL NO.
MADE IN JAPAN

US, Canadian MODEL:	AC120, 60Hz 12W
AEP MODEL:	AC220-230V, 50/60Hz
Australian MODEL:	AC240V, 50/60Hz
E, Saudi Arabian MODEL:	AC110-120, 220-240V, 50/60Hz, 12W


CDP-195
CDP-295
CDP-491
SONY
MODEL NO.
SERIAL NO.
MADE IN FRANCE

AEP MODEL:	AC220-230V, 50/60Hz
UK MODEL:	AC240V, 50/60Hz

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer: Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig.A)

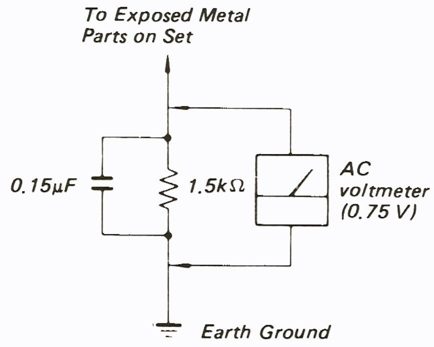

To Exposed Metal Parts on Set
0.15μF
1.5kΩ
AC voltmeter (0.75 V)
Earth Ground

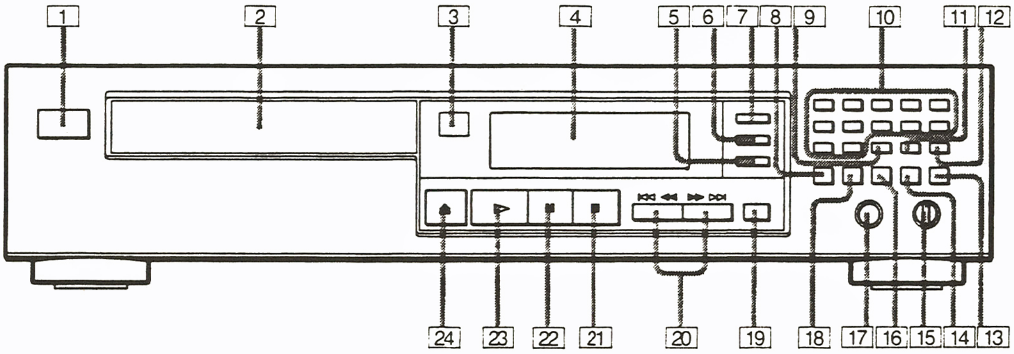
Fig. A. Using an AC voltmeter to check AC leakage.

SECTION 1

GENERAL

LOCATION OF CONTROLS

This section is extracted from instruction manual.



CDP-295

1 POWER switch
2 Disc tray
3 Remote sensor
4 Display window
5 PROGRAM button
6 SHUFFLE button
7 CONTINUE button
8 TIME button
9 CHECK (program check) button
10 Numeric buttons
11 CLEAR (program clear) button
12 >12 (over 12) button
13 MUSIC SCAN button
14 PEAK SEARCH button
15 PHONE LEVEL control
16 FADER button
17 PHONES jack
18 REPEAT button
19 EDIT/TIME FADE button
20 ⏮ ⏪/⏩ ⏭ (AMS*/RMS**/manual search) buttons
21 ■ (stop) button
22 ❚❚ (pause) button
23 ▶ (play) button
24 ⏏ (open/close) button

* AMS is the abbreviation of Automatic Music Sensor.
** RMS is the abbreviation of Random Music Sensor.

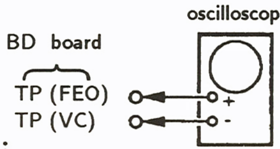
SECTION 2

ELECTRICAL BLOCK CHECKING

Note :

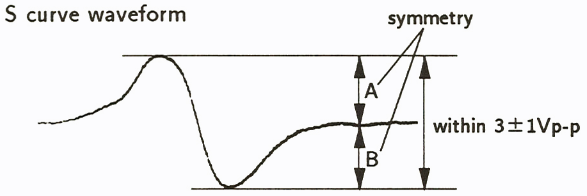
1. CD Block basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than 10MΩ impedance.
4. Clean an object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S Curve Check


oscilloscope
BD board
TP (FEO)
TP (VC)
+
-

Procedure :

1. Connect oscilloscope to test point TP (FEO) on BD board.
2. Connect between test point TP (FES) and TP (VC) by lead wire.
3. Turned Power switch on and actuate the focus serch. (actuate the focus serch when disc table is moving in and out.)
4. Check the oscilloscope waveform (S curve) is symmetrical between A and B. And confirm peak to peak level within 3±1Vp-p.

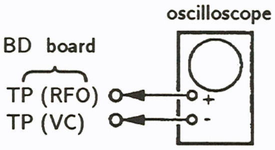

S curve waveform
symmetry
A
B
within 3±1Vp-p

5. After check, remove the lead wire connected in step 2.

Note : • Try to mesure several times to make sure that the ratio of A : B or B : A is more than 10 : 7.

• Take sweep time as long as possible and light up the brightness to obtain best waveform.

RF Level Check

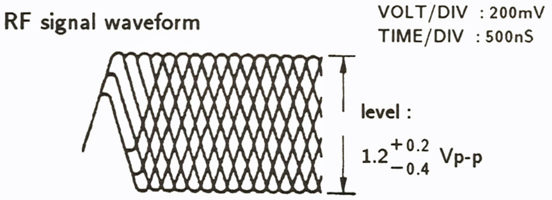

oscilloscope
BD board
TP (RFO)
TP (VC)
+
-

Procedure :

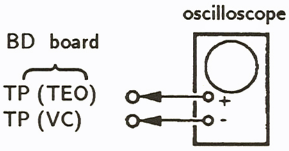
1. Connect oscilloscope to test point TP (RFO) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note :

Clear RF signal waveform means that the shape "◇" can be clearly distinguished at the center of the waveform.

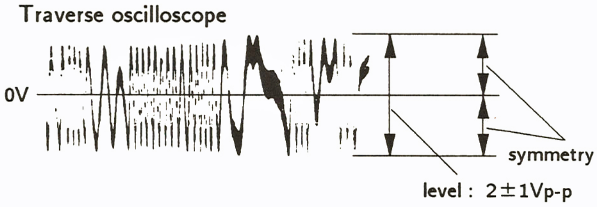

RF signal waveform
VOLT/DIV : 200mV
TIME/DIV : 500nS
level :
1.2 +0.2 −0.4 Vp-p

E-F Balance Check


oscilloscope
BD board
TP (TEO)
TP (VC)
+
-

Procedure :

1. Connect test point TP (ADJ) to ground and TP (TES) to TP (VC) with lead wire.
2. Connect oscilloscope to test point TP (TEO) on BD board.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and playback.
5. Confirm that the osilloscope waveform is symmetrical on the top and bottom in relation to 0V, and check this level.

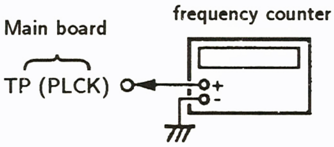

Traverse oscilloscope
0V
symmetry
level : 2±1Vp-p

6. Remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

1. Connect frequency counter to test point (PLCK) with lead wire.


Main board
frequency counter
TP (PLCK)
+
-

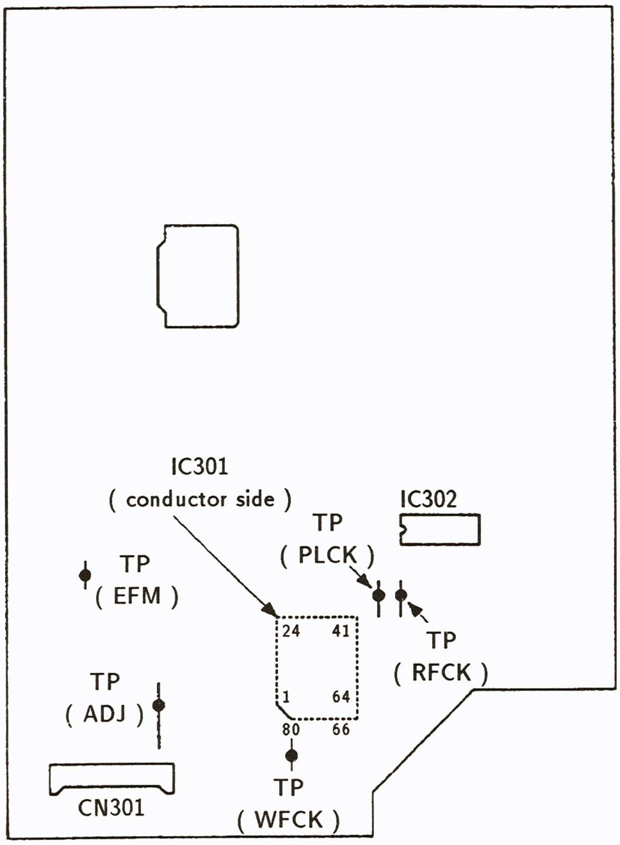
2. Turn Power switch on.
3. Confirm that reading on frequency counter is 4. 3218MHz.

Focus/Tracking Gain

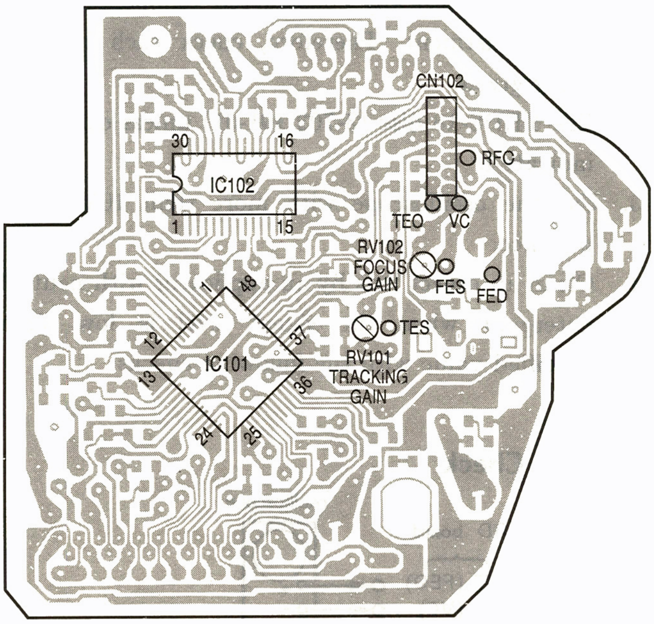
This gain has a margin, so even if it is slightly off. There is no problem.
Therefore, do not perform, this adjustment.
Please note that it should be fixed to mechanical center position when you moved and do not know original position.

Adjustment Location ;

[MAIN BOARD] – Component Side –


IC301
(conductor side)
IC302
TP
(PLCK)
TP
(EFM)
24
41
1
64
80
66
TP
(RFCK)
TP
(ADJ)
CN301
TP
(WFCK)

[BD BOARD] – Component Side –


CN102
RFC
30
16
IC102
1
15
TEO
VC
RV102
FOCUS
GAIN
FES
FED
TES
RV101
TRACKING
GAIN
IC101
1
48
12
37
13
36
24
25

SECTION 3
DISASSEMBLY

Note :

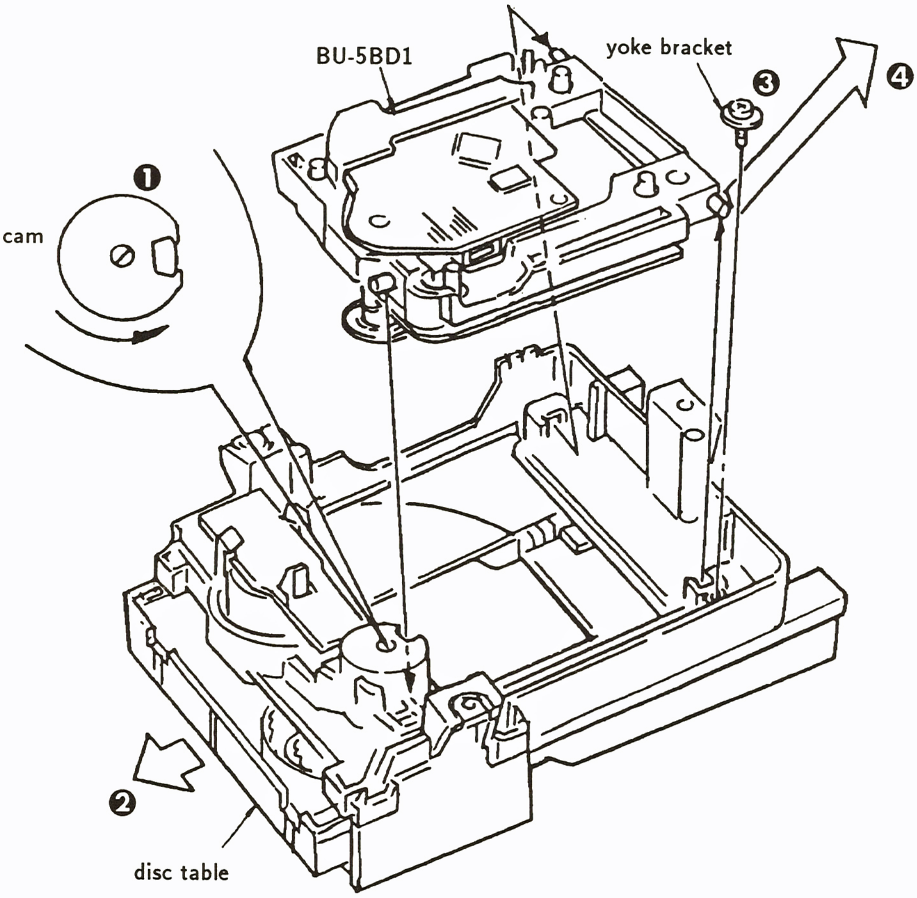
Follow the disassembly procedure in the nomerical order given.

❶ Turn the cam to the direction of arrow (Counter clock wise) by minus screw driver.

❷ Take off the disc table.

❸ Remove the yoke bracket.

❹ Remove the MD (BU-5BD1) to the direction of arrow.


BU-5BD1
yoke bracket
❸
❹
❶
cam
❷
disc table

SECTION 4

DIAGRAMS

4-1. PIN FUNCTION OF IC101 AND IC401

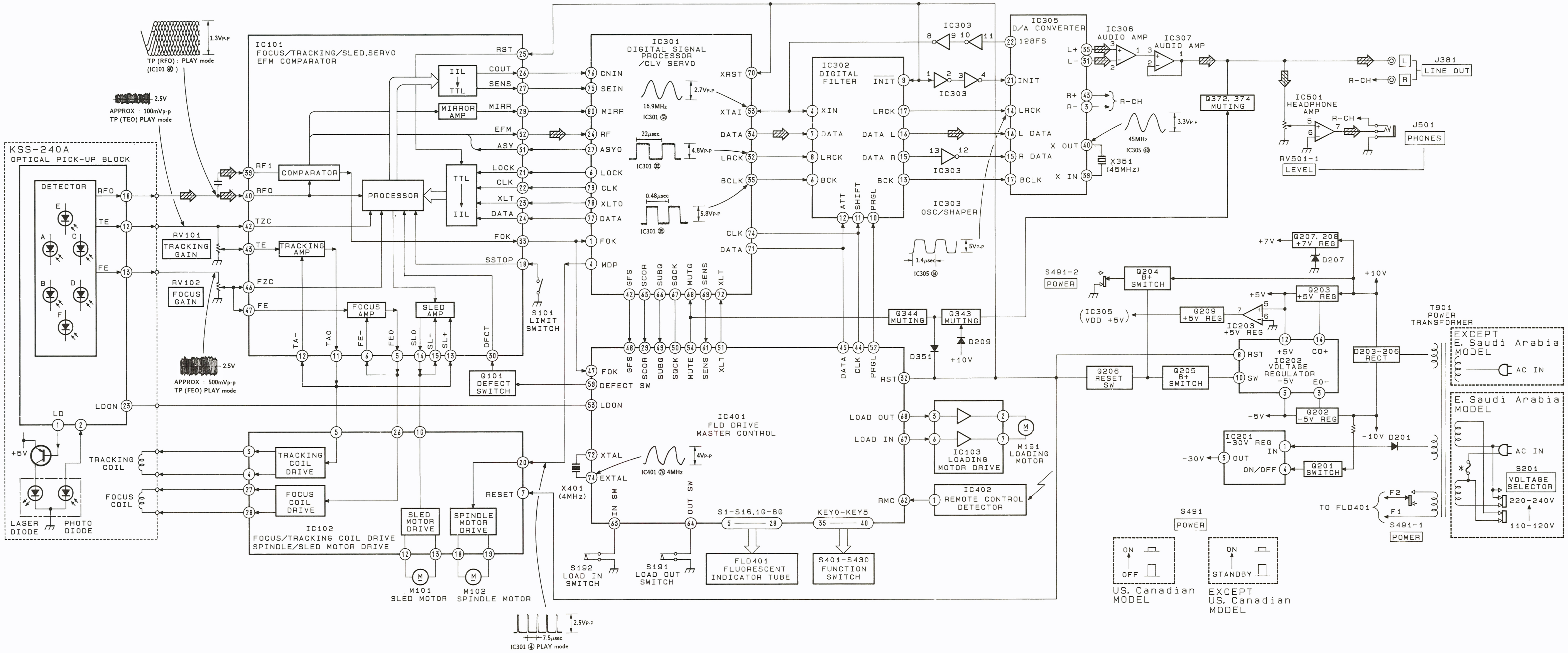
● IC101 (CXA1372Q) PIN FUNCTION

Pin No.	Pin Name	I/O	Description
1	VC	—	GND when two (±) dual power supplies are in use, or the center voltage (2.5V) when a single power supply is in use.
2	FGD	I	Time constants for gain switching in normal mode/down mode and for focus gain are conncted between the FGD and FS3 pins.
3	FS3	I	
4	FLB	I	The capacitor for low frequency boost in the focus servo loop is connected.
5	FEO	O	Focus drive output.
6	FE−	I	Inverted input to focus amplifier.
7	SRCH	I	Time constants to generate the focus search waveform are connected.
8	TGU	I	Time constants for gain switching in normal mode/up mode and for tracking gain are connected between TGU pin and TG2 pin.
9	TG2	I	
10	AVCC	—	Analog power supply (5V when ± dual power supplies are in use, 5V when a single power supply is in use.)
11	TAO	O	Tracking drive output.
12	TA−	I	Inverted input to tracking amplifier.
13	SL+	I	Non-inverted input to sled amplifier.
14	SLO	O	Sled drive output.
15	SL−	I	Non-inverted input to sled amplifier.
16	ESET	I	The 610kΩ phase compensator resistor is connected to this pin.
17	ISET	I	The current setting resistor is connected to this pin.
18	SSTOP	I	The limit switch is connected to this pin.
19	AVEE	—	Analog power supply (−5V when ± dual power supplies are in use, or GND when a single power supply is in use.)
20	DIRC	I	Direct control pin.
21	LOCK	I	Sled run-away prevention circuit operates when this signal is "L".
22	CLK	I	Serial data transfer clock input that is supplied from CPU (or DSP).
23	XLT	I	Latch input from CPU (or DSP).
24	DATA	I	Serial data input from CPU (or DSP).
25	XRST	I	System reset. "L" to reset.
26	C.OUT	O	Output to tracking counter.
27	SENS	O	SENS output.
28	DGND	—	Digital ground (GND). (GND when ± dual power supplies are in use. GND when a single power supply is in use.)
29	MIRR	O	Mirror output.
30	DFCT	O	Defect output. "H" when defective.
31	ASY	I	Auto-assymmetry control input.
32	EFM	O	EFM comparator output.
33	FOK	O	Focus OK.
34	CC2	I	Defect-bottom-hold input (inout by capacitive coupling).
35	CC1	O	Defect-bottom-hold output.
36	DVCC	—	Digital power supply. (+5V when ± dual power supplies in use. +5V when a single power supply is in use.)
37	CB	I	The defect-bottom-hold capacitor is connrcted to this pin.
38	CP	I	The mirror hold capacitor is connected to this pin.
39	RF1	I	RF signal input (input by capacitive coupling).
40	RF0	I	RF signal input (input by DC coupling).
41	DVEE	—	Digital power supply (−5V when ± dual power supplies are in use. GND when a single power supply is in use.)
42	TZC	I	Tracking zero-cross comparator input.
43	TE	I	Tracking error input.
44	TDFCT	I	The defect prevention hold capacitor is connected to this pin.
45	ATSC	I	Anti-shock input.
46	FZC	I	Focus zero-cross comparator input.
47	FE	I	Focus error input.
48	FDFCT	I	The defect prevention hold capactior is connected to this pin.

● IC401 (CXP50112-097Q) PIN FUNCTION

Pin No.	Pin Name	I /O	Description
1 - 4	–	–	Not used (open).
5 - 20	S1 -S16	O	Segment output to FL tube.
21 - 28	1G - 8G	O	Common output to FL tube.
29	SCOR	I	Subcode sync signal S0 + S1 detection input from IC301 (CXD2500AQ).
30	–	–	Not used (open).
31	+5V	–	+5V
32	RST	I	Reset input.
33	+5V	–	+5V
34	VDD	–	Power voltage terminal (+5V).
35 - 40	KEY0 - KEY5	I	Key A/D input.
41	–	–	Not used (Ground).
42	TIMER SW	I	Auto play select input (Auto play "L").
43	–	–	Not used (Ground).
44	CLK	O	Serial data transfer clock output to IC301 (CXD2500AQ).
45	DATA	O	Serial data output to IC301 (CXD2500AQ).
46	–	–	Not used (Ground).
47	FOK	I	Focus OK signal input from IC101 (CXA1372Q).
48	GFS	I	Frame sync signal clock status input from IC301 (CXD2500AQ).
49	SUBQ	I	Sub code (Q data) serial input from IC301 (CXD2500AQ).
50	SQCLK	O	Sub code (Q data) readout clock output to IC301 (CXD2500AQ).
51	XLT	O	Serial data latch output.
52	PRGL	O	Attenuate data latch clock output to IC302 (CXD2554P).
53	LDON	O	Laser diode ON/OFF select output of optical pick-up.
54	AMUT	O	Muting output for IC301 (CXD2500AQ) and Q344 (2SC3399). Muting on by "H", Muting off by "L".
55 - 58	B0 - B3	–	Not used (+5V)
59	DEFECT SW	O	Deffect circuit ON/OFF select output to IC101 (CXA1372Q).
60	–	–	Not used (open).
61	SENSE	I	SENS signal input from IC301 (CXD2500AQ).
62	RMC	I	Remote control signal input.
63	INSW	I	Input for loading out switch.
64	OUTSW	I	Output for loading in switch.
65	ADJ	I	Tset mode input. GFS check will not activate by "L".
66	AFADJ	I	Test mode input. All test operation will be activate by "L" mode when power on.
67	LODIN	O	Output for turn the loading motor to loading.
68	LODOUT	O	Output for turn the loading motor to un loading.
69	–	–	Not used (open).
70	–	–	Not used (open).
71	Vss	–	Ground.
72	XTAL	O	Clock output.
73	+5V	–	+5V
74	EXTAL	I	Clock input. (4MHz)
75	+5V	–	+5V
76	−30V	I	Power voltage −30V for built in FL tube controller.
77	–	–	Not used (open).
78	–	–	Not used (open).
79	–	–	Not used (open).
80	–	–	Not used (open).

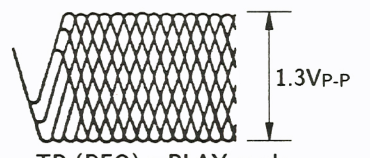
4-2. BLOCK DIAGRAM



KSS-240A
OPTICAL PICK-UP BLOCK
DETECTOR
RFO
TE
FE
LDON
LD
+5V
LASER DIODE
PHOTO DIODE
TRACKING COIL
FOCUS COIL
TP (RFO) : PLAY mode (IC101 ㊵)
1.3Vp-p
APPROX : 100mVp-p TP (TEO) PLAY mode
2.5V
APPROX : 500mVp-p TP (FEO) PLAY mode
RV101 TRACKING GAIN
RV102 FOCUS GAIN
IC101 FOCUS/TRACKING/SLED.SERVO EFM COMPARATOR
RF1
RFO
TZC
TE
FZC
FE
COMPARATOR
PROCESSOR
TRACKING AMP
FOCUS AMP
SLED AMP
MIRROR AMP
IIL TTL
TTL IIL
RST
COUT
SENS
MIRR
EFM
ASY
LOCK
CLK
XLT
DATA
FOK
SSTOP
TA-
TAO
FE-
FEO
SLO
SL-
SL+
DFCT
S101 LIMIT SWITCH
Q101 DEFECT SWITCH
IC102 FOCUS/TRACKING COIL DRIVE SPINDLE/SLED MOTOR DRIVE
TRACKING COIL DRIVE
FOCUS COIL DRIVE
SLED MOTOR DRIVE
SPINDLE MOTOR DRIVE
RESET
M101 SLED MOTOR
M102 SPINDLE MOTOR
2.5Vp-p
7.5μsec
IC301 ④ PLAY mode
IC301 DIGITAL SIGNAL PROCESSOR /CLV SERVO
CNIN
SEIN
MIRR
RF
ASYO
LOCK
CLK
XLTO
DATA
FOK
MDP
XRST
XTAI
DATA
LRCK
BCLK
CLK
DATA
16.9MHz IC301 ⑬
2.7Vp-p
22μsec
4.8Vp-p
IC301 ㊿
0.48μsec
5.8Vp-p
IC301 ㊺
GFS SCOR SUBQ SQCK MUTG SENS XLT
IC302 DIGITAL FILTER
INIT
XIN
DATA
LRCK
BCK
LRCK
DATA L
DATA R
BCK
ATT SHIFT PRGL
IC303
IC303 OSC/SHAPER
1.4μsec
5Vp-p
IC305 ⑭
IC305 D/A CONVERTER
128FS
INIT
LRCK
L DATA
R DATA
BCLK
L+ L-
R+ R-
R-CH
X OUT
X IN
45MHz IC305 ㊵
3.3Vp-p
X351 (45MHz)
IC306 AUDIO AMP
IC307 AUDIO AMP
Q372, 374 MUTING
J381 LINE OUT
L
R
R-CH
IC501 HEADPHONE AMP
RV501-1 LEVEL
J501 PHONES
Q344 MUTING
Q343 MUTING
D209
+10V
D351
IC401 FLD DRIVE MASTER CONTROL
FOK
DEFECT SW
LDON
XTAL
EXTAL
4Vp-p
IC401 ⑭ 4MHz
X401 (4MHz)
IN SW
OUT SW
S1-S16,1G-8G
KEY0-KEY5
RST
LOAD OUT
LOAD IN
RMC
IC103 LOADING MOTOR DRIVE
M191 LOADING MOTOR
IC402 REMOTE CONTROL DETECTOR
S192 LOAD IN SWITCH
S191 LOAD OUT SWITCH
FLD401 FLUORESCENT INDICATOR TUBE
S401-S430 FUNCTION SWITCH
S491-2 POWER
Q204 B+ SWITCH
(IC305 VDD +5V)
Q209 +5V REG
IC203 +5V REG
+7V
Q207, 208 +7V REG
D207
+10V
+5V
Q203 +5V REG
IC202 VOLTAGE REGULATOR
RST
SW
CO+
EO-
+5V
-5V
Q206 RESET SW
Q205 B+ SWITCH
-5V
Q202 -5V REG
IC201 -30V REG
IN
OUT
ON/OFF
-30V
Q201 SWITCH
-10V
D201
D203-206 RECT
T901 POWER TRANSFORMER
EXCEPT E, Saudi Arabia MODEL
AC IN
E, Saudi Arabia MODEL
AC IN
S201 VOLTAGE SELECTOR
220-240V
110-120V
TO FLD401
F2
F1
S491-1 POWER
S491 POWER
ON OFF
US, Canadian MODEL
ON STANDBY
EXCEPT US, Canadian MODEL

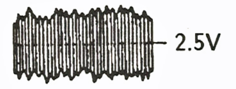
4-3. WAVEFORMS

❶



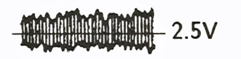
TP (RFO) : PLAY mode
(IC101 ㊵)

❷



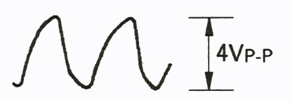
APPROX : 500mVp-p
TP (FEO) PLAY mode

❸



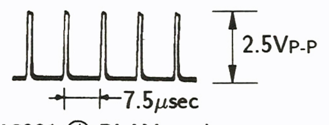
APPROX : 100mVp-p
TP (TEO) PLAY mode

❹



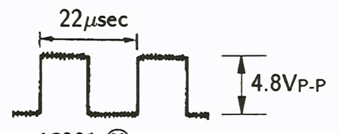
IC401 ⑭ 4MHz

❺



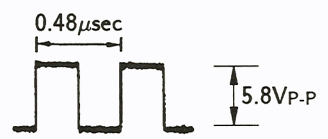
IC301 ④ PLAY mode

❻



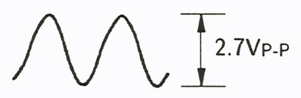
IC301 ㉜

❼



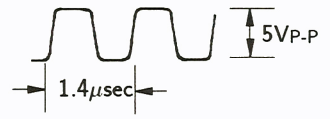
IC301 ㉟

❽



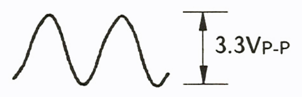
16.9MHz
IC301 ㊸

❾



IC305 ⑭

❿



45MHz
IC305 ㊵

4-4. PRINTED WIRING BOARDS

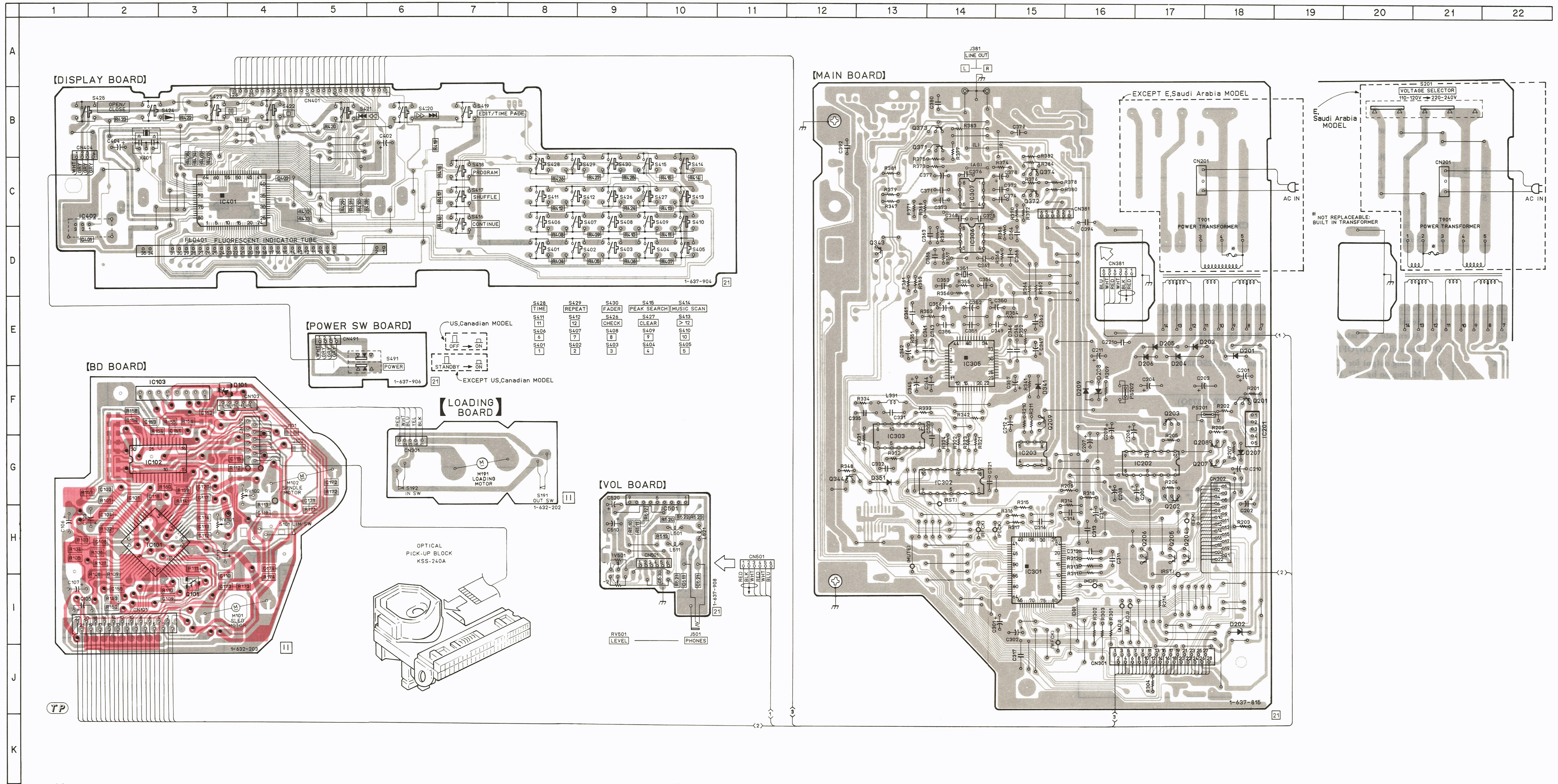
• SEMICONDUCTOR LOCATION

Ref. No.	LOCATION No.	Ref. No.	LOCATION No.
D101	F-3	IC306	D-14
D201	E-18	IC307	C-14
D202	I-18	IC401	C-4
D203	E-17	IC402	C-1
D204	E-17	IC501	G-10
D205	E-17		
D206	E-17	Q101	I-3
D207	G-18	Q201	F-18
D208	F-16	Q202	G-17
D209	F-16	Q203	F-17
D341	F-15	Q204	H-17
D351	G-13	Q205	H-17
		Q206	H-17
IC101	H-2	Q207	G-18
IC102	G-2	Q208	G-18
IC103	F-3	Q209	F-15
IC201	F-18	Q343	D-13
IC202	G-17	Q344	G-12
IC203	G-15	Q371	B-14
IC301	H-15	Q372	C-15
IC302	G-14	Q373	B-14
IC303	G-13	Q374	C-15
IC305	E-14		

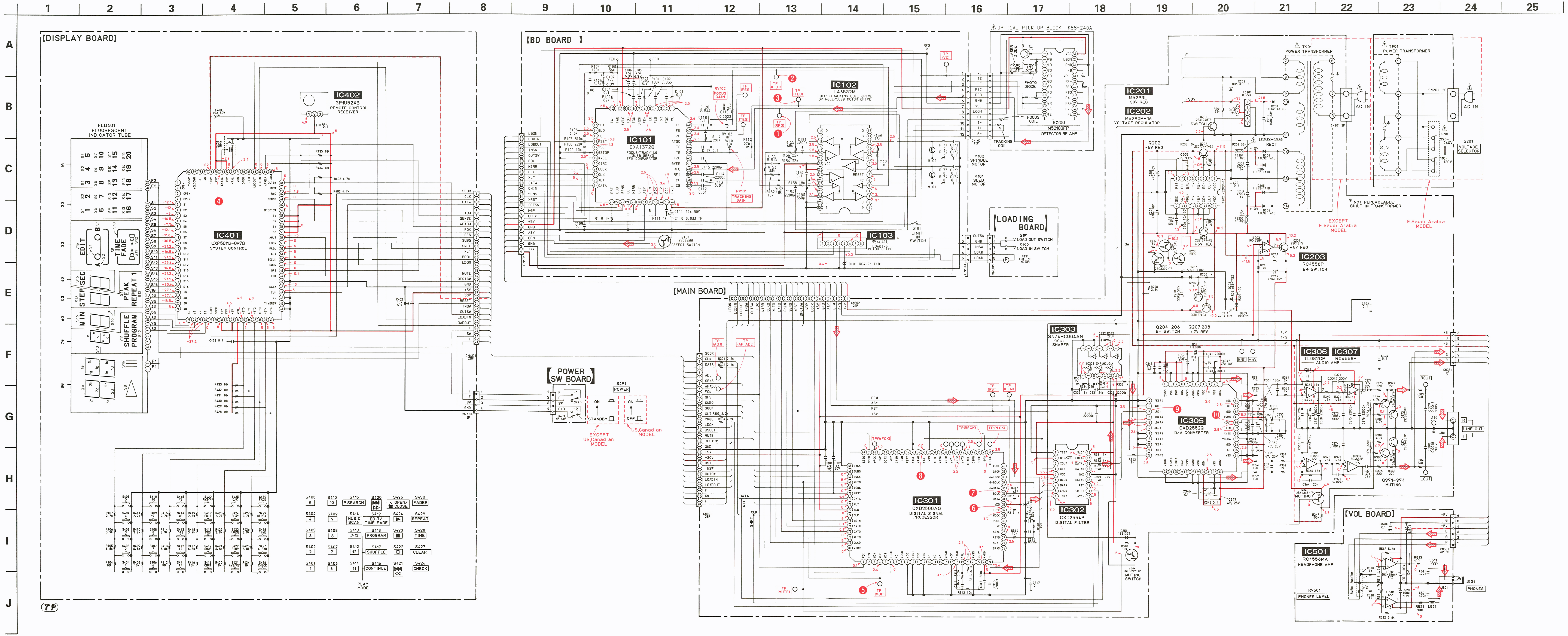
Note:

- o——— : indicated a lead wire mounted on the component side.
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- ▨ : Pattern from the side which enables seeing.
- 🟥 : Pattern of the rear side.

"Semiconductor Lead Layouts" is inserted on P21.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
A
B
C
D
E
F
G
H
I
J
K
[DISPLAY BOARD]
FLUORESCENT INDICATOR TUBE
1-637-904
21
S428
TIME
S429
REPEAT
S430
FADER
S415
PEAK SEARCH
S414
MUSIC SCAN
S411
11
S412
12
S426
CHECK
S427
CLEAR
S413
> 12
S406
6
S407
7
S408
8
S409
9
S410
10
S401
1
S402
2
S403
3
S404
4
S405
5
[POWER SW BOARD]
S491
POWER
1-637-906
21
US,Canadian MODEL
OFF
ON
STANDBY
ON
EXCEPT US,Canadian MODEL
[BD BOARD]
IC101
IC102
IC103
M101 SLED
M102 SPINDLE MOTOR
1-632-202
11
【LOADING BOARD】
RED
WHT
BLU
YEL
BLK
M101 LOADING MOTOR
S192 IN SW
S191 OUT SW
1-632-202
11
OPTICAL PICK-UP BLOCK KSS-240A
[VOL BOARD]
CN601
RV501 LEVEL
J501 PHONES
21
TP
[MAIN BOARD]
J381 LINE OUT
L
R
EXCEPT E,Saudi Arabia MODEL
E, Saudi Arabia MODEL
S201 VOLTAGE SELECTOR
CN201
T901 POWER TRANSFORMER
AC IN
NOT REPLACEABLE BUILT IN TRANSFORMER
IC301
IC302
IC303
IC305
IC201
IC202
IC203
CN301
CN381
1-637-815
21

4-5. SCHEMATIC DIAGRAM


[DISPLAY BOARD]
[BD BOARD]
[MAIN BOARD]
[POWER SW BOARD]
[LOADING BOARD]
[VOL BOARD]
OPTICAL PICK UP BLOCK KSS-240A
FL0401 FLUORESCENT INDICATOR TUBE
IC402 GP1U52XB REMOTE CONTROL RECEIVER
IC401 CXP50112-097Q SYSTEM CONTROL
IC101 CXA1372Q FOCUS/TRACKING ERROR AMP EFM COMPARATOR
IC102 LA6532M FOCUS/TRACKING COIL DRIVE SPINDLE/SLED MOTOR DRIVE
IC103 M54641L LOADING MOTOR DRIVE
IC200 M52109FP DETECTOR RF AMP
IC201 M5293L -30V REG
IC202 M5290P-16 VOLTAGE REGULATOR
IC203 RC4558P B+ SWITCH
IC301 CXD2500AQ DIGITAL SIGNAL PROCESSOR
IC302 CXD2554P DIGITAL FILTER
IC303 SN74HCU04AN OSC/SHAPER
IC305 CXD2552Q D/A CONVERTER
IC306 TL082CP AUDIO AMP
IC307 RC4558P
IC501 RC4556MA HEADPHONE AMP
T901 POWER TRANSFORMER
S201 VOLTAGE SELECTOR
M102 SPINDLE MOTOR
M101 SLED MOTOR
S491 POWER
EXCEPT US,Canadian MODEL
US,Canadian MODEL
EXCEPT E,Saudi Arabia MODEL
E,Saudi Arabia MODEL
* NOT REPLACEABLE: BUILT IN TRANSFORMER
LINE OUT
PHONES
RV501 PHONES LEVEL
Q371-374 MUTING
Q204-206 B+ SWITCH
Q207,208 +7V REG
PLAY MODE
TP

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4W or less unless otherwise noted.
- △ : internal component.

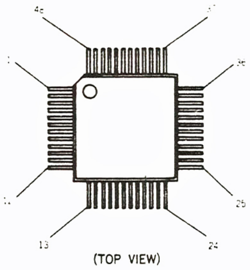
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬ : B + Line.
- ▪▪▪▪ : B – Line.
- ☐ : adjustment for repair.
- Voltages are DC between measurement points and ground under no-signal (STOP) conditions.
- no make : PB mode
- Voltages are taken with a VOM (input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path
  ⇨ : CD

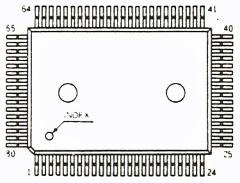
4-6. SEMICONDUCTOR LEAD LAYOUTS

CXA1372Q


48
37
1
36
12
25
13
24

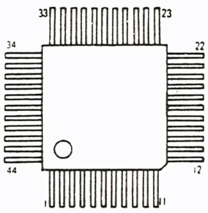
(TOP VIEW)

CXD2500AQ
CXP50112-097Q

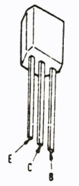

64
41
55
40
INDEX
80
25
1
24

MARKING SIDE VIEW

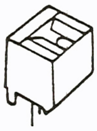
CXD2552Q


33
23
34
22
44
12
1
11

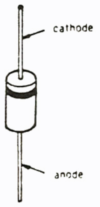
DTA144ES
DTC144ES
2SC2458-YGR
2SC3623A-LK



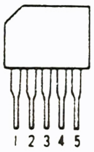
GP1U52XB



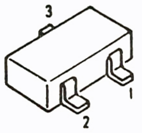
IN4148M


cathode
anode

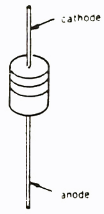
M5293L



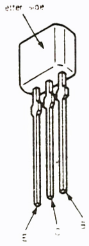
RD4.7M-B1



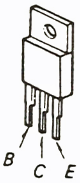
RD5.6ES-B2
RD6.8ES-B1
RD7.5JS-B2
ISS202-1
11ES2
11EQS04


cathode
anode

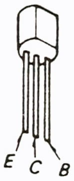
2SA1175-HFE


etter side
E
C
B

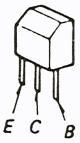
2SB1094-L
2SB1274SA-RS



2SC1815-Y

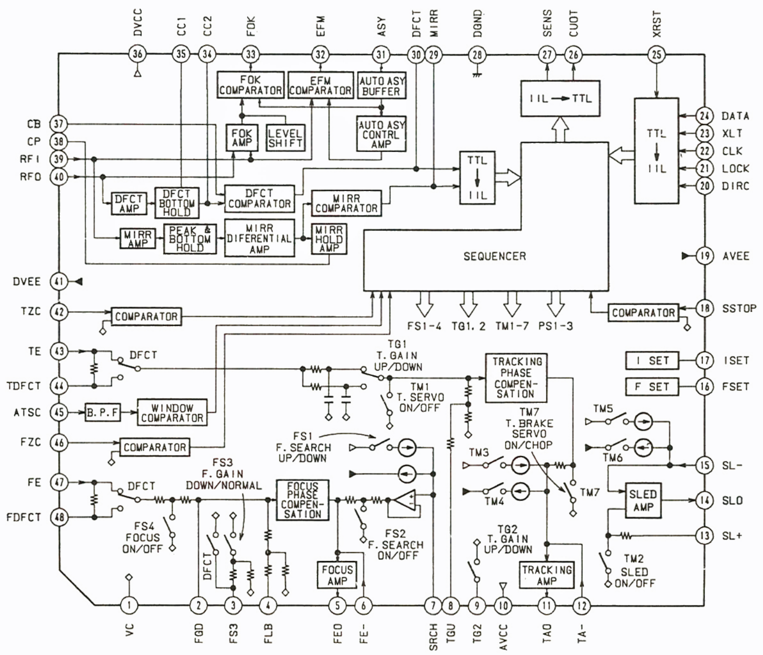


2SD774-34

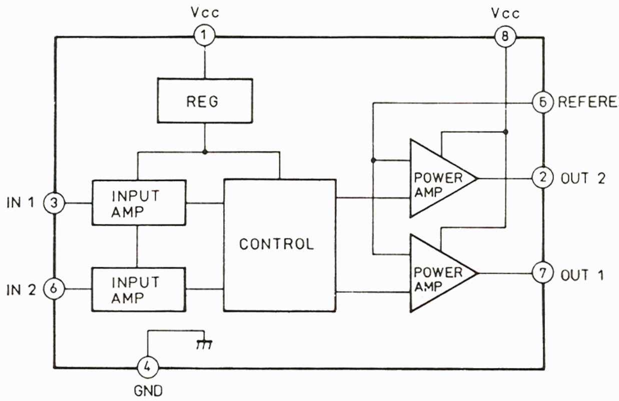


4-7. IC BLOCK DIAGRAMS

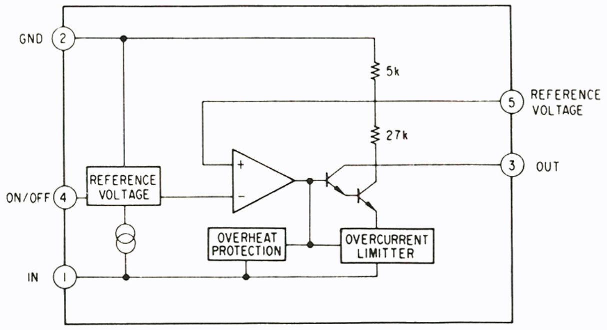
IC101 CXA1372Q


DVCC
CC1
CC2
FOK
EFM
ASY
DFCT
MIRR
DGND
SENS
C.OUT
XRST
CB
CP
RFI
RFO
DVEE
TZC
TE
TDFCT
ATSC
FZC
FE
FDFCT
DATA
XLT
CLK
LOCK
DIRC
AVEE
SSTOP
ISET
FSET
SL-
SLO
SL+
VC
FGD
FS3
FLB
FEO
FE-
SRCH
TGU
TG2
AVCC
TAO
TA-
FOK COMPARATOR
EFM COMPARATOR
AUTO ASY BUFFER
AUTO ASY CONTRL AMP
FOK AMP
LEVEL SHIFT
IIL → TTL
TTL ↓ IIL
DFCT AMP
DFCT BOTTOM HOLD
DFCT COMPARATOR
MIRR COMPARATOR
MIRR AMP
PEAK & BOTTOM HOLD
MIRR DIFERENTIAL AMP
MIRR HOLD AMP
SEQUENCER
COMPARATOR
FS1-4
TG1,2
TM1-7
PS1-3
I SET
F SET
B.P.F
WINDOW COMPARATOR
TRACKING PHASE COMPEN-SATION
FOCUS PHASE COMPEN-SATION
FOCUS AMP
TRACKING AMP
SLED AMP
TG1 T.GAIN UP/DOWN
TM1 T.SERVO ON/OFF
TM7 T.BRAKE SERVO ON/CHOP
FS1 F.SEARCH UP/DOWN
FS3 F.GAIN DOWN/NORMAL
FS4 FOCUS ON/OFF
FS2 F.SEARCH ON/OFF
TG2 T.GAIN UP/DOWN
TM2 SLED ON/OFF
TM3
TM4
TM5
TM6
TM7
DFCT

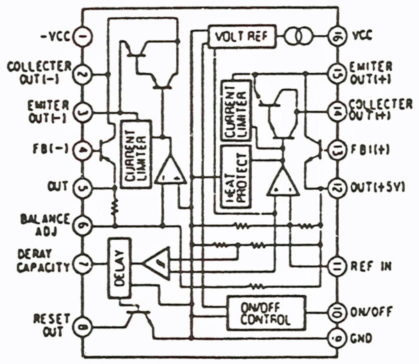
IC103 M54641L


Vcc
Vcc
REG
INPUT AMP
INPUT AMP
CONTROL
POWER AMP
POWER AMP
IN 1
IN 2
REFERENCE
OUT 2
OUT 1
GND

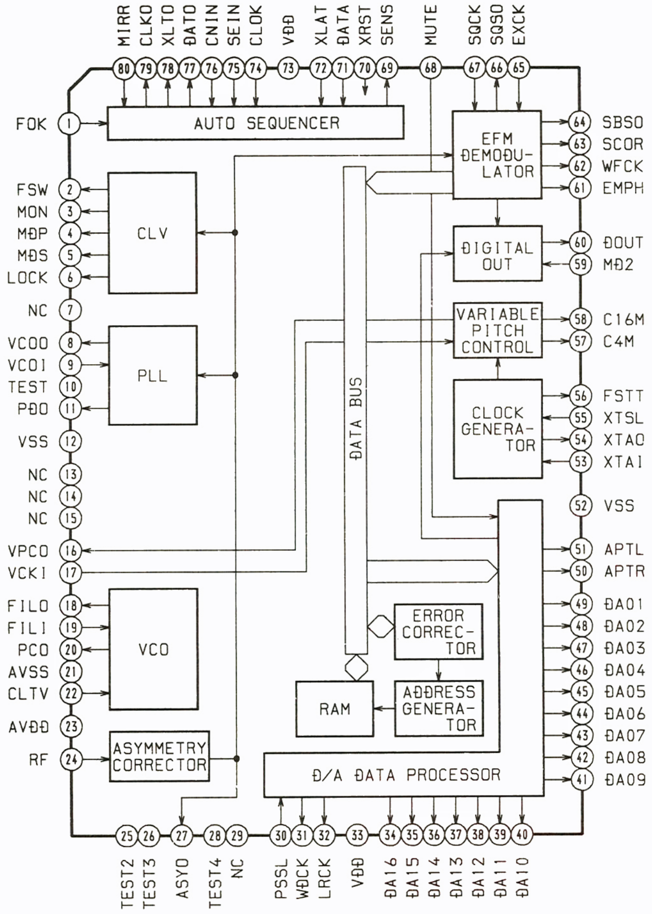
IC201 M5293L


GND
ON/OFF
IN
5k
27k
REFERENCE VOLTAGE
OUT
REFERENCE VOLTAGE
OVERHEAT PROTECTION
OVERCURRENT LIMITTER

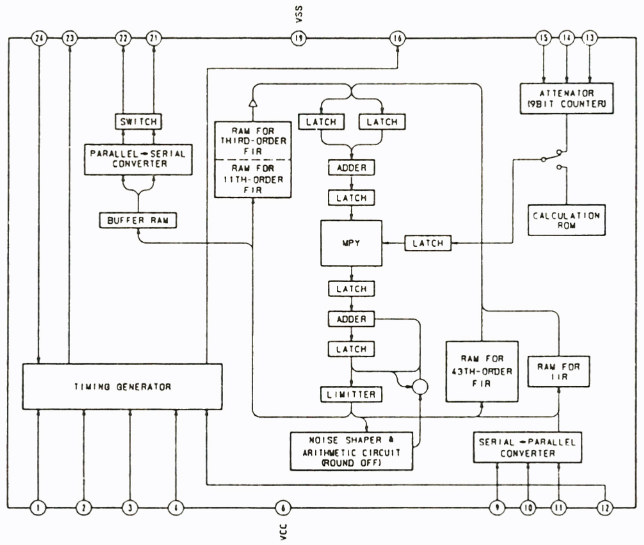
IC202 M5290P-16


-VCC
COLLECTER OUT(-)
EMITER OUT(-)
FB(-)
OUT
BALANCE ADJ
DERAT CAPACITY
RESET OUT
VCC
EMITER OUT(+)
COLLECTER OUT(+)
FB(+)
OUT(+5V)
REF IN
ON/OFF
GND
VOLT REF
CURRENT LIMITER
HEAT PROTECT
CURRENT LIMITER
DELAY
ON/OFF CONTROL

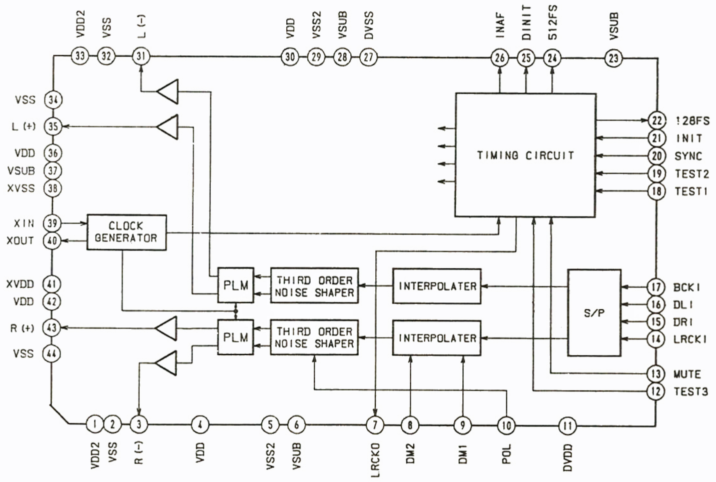
IC301 CXD2500AQ


MIRR
CLKO
XLTO
DATO
CNIN
SEIN
CLOK
VDD
XLAT
DATA
XRST
SENS
MUTE
SQCK
SQSO
EXCK
FOK
FSW
MON
MDP
MDS
LOCK
NC
VCOO
VCOI
TEST
PDO
VSS
NC
NC
NC
VPCO
VCKI
FILO
FILI
PCO
AVSS
CLTV
AVDD
RF
SBSO
SCOR
WFCK
EMPH
DOUT
MD2
C16M
C4M
FSTT
XTSL
XTAO
XTAI
VSS
APTL
APTR
DA01
DA02
DA03
DA04
DA05
DA06
DA07
DA08
DA09
TEST2
TEST3
ASYO
TEST4
NC
PSSL
WDCK
LRCK
VDD
DA16
DA15
DA14
DA13
DA12
DA11
DA10
AUTO SEQUENCER
CLV
PLL
VCO
ASYMMETRY CORRECTOR
DATA BUS
EFM DEMODU-LATOR
DIGITAL OUT
VARIABLE PITCH CONTROL
CLOCK GENERA-TOR
ERROR CORREC-TOR
RAM
ADDRESS GENERA-TOR
D/A DATA PROCESSOR

IC302 CXD2554P


VSS
VCC
SWITCH
PARALLEL→SERIAL CONVERTER
BUFFER RAM
RAM FOR THIRD-ORDER FIR
RAM FOR 11TH-ORDER FIR
LATCH
LATCH
ADDER
LATCH
MPY
LATCH
LATCH
ADDER
LATCH
LIMITTER
ATTENATOR (9BIT COUNTER)
CALCULATION ROM
RAM FOR 43TH-ORDER FIR
RAM FOR IIR
TIMING GENERATOR
NOISE SHAPER & ARITHMETIC CIRCUIT (ROUND OFF)
SERIAL →PARALLEL CONVERTER

IC305 CXD2552AQ


VDD2
VSS
L (-)
VDD
VSS2
VSUB
DVSS
INAF
DINIT
512FS
VSUB
VSS
L (+)
VDD
VSUB
XVSS
XIN
XOUT
XVDD
VDD
R (+)
VSS
128FS
INIT
SYNC
TEST2
TEST1
BCKI
DLI
DRI
LRCKI
MUTE
TEST3
VDD2
VSS
R (-)
VDD
VSS2
VSUB
LRCKO
DM2
DM1
POL
DVDD
TIMING CIRCUIT
CLOCK GENERATOR
PLM
PLM
THIRD ORDER NOISE SHAPER
THIRD ORDER NOISE SHAPER
INTERPOLATER
INTERPOLATER
S/P

SECTION 5

EXPLODED VIEW

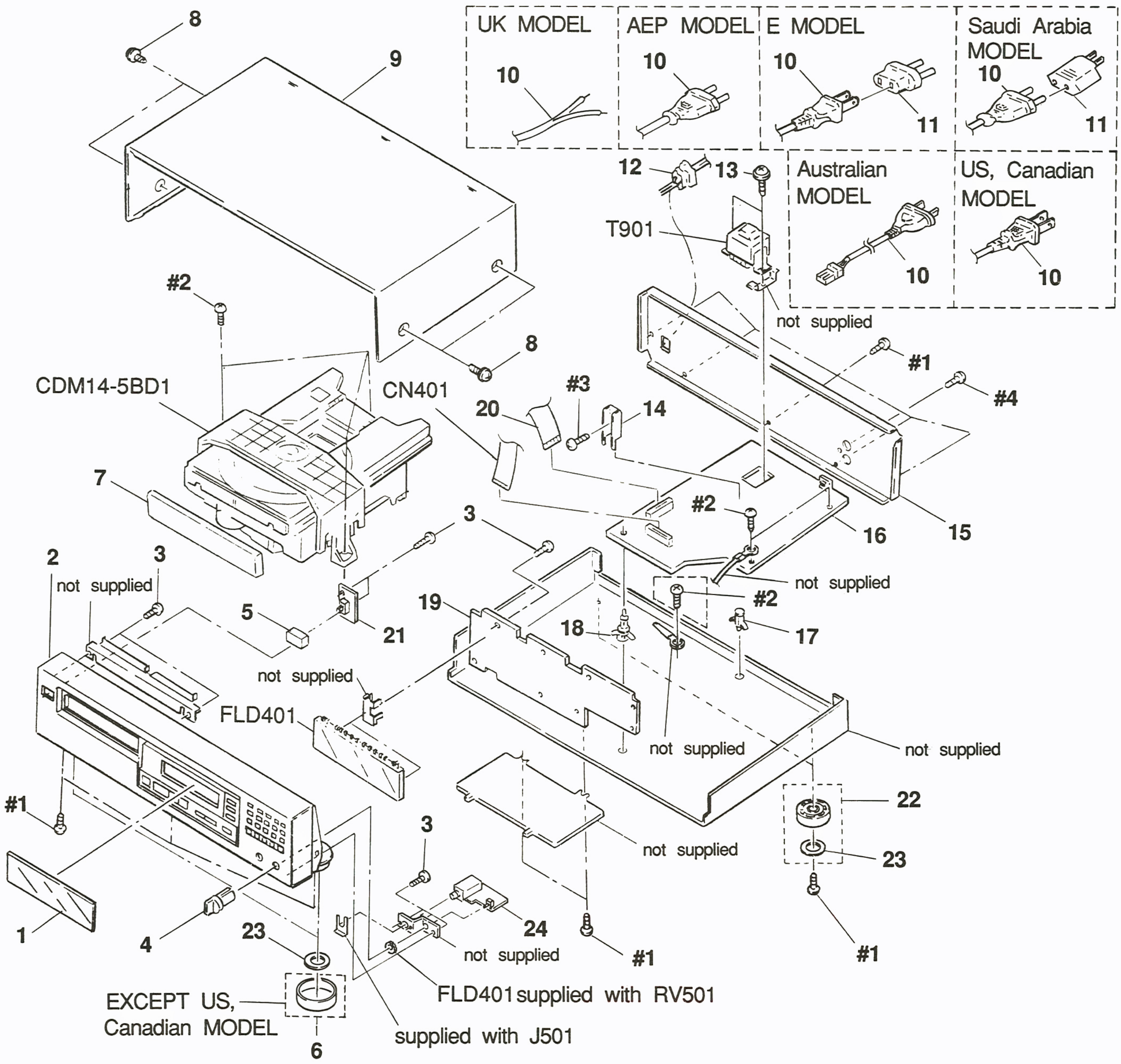
NOTE:

- –XX, –X mean standardized parts, so they may have some differences from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Color Indication of Appearance Parts
  Example:
  KNOB,BALANCE(WHITE)...(RED)
  ↑ ↑
  Parts color Cabinet's color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware(# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

(1) CABINET SECTION

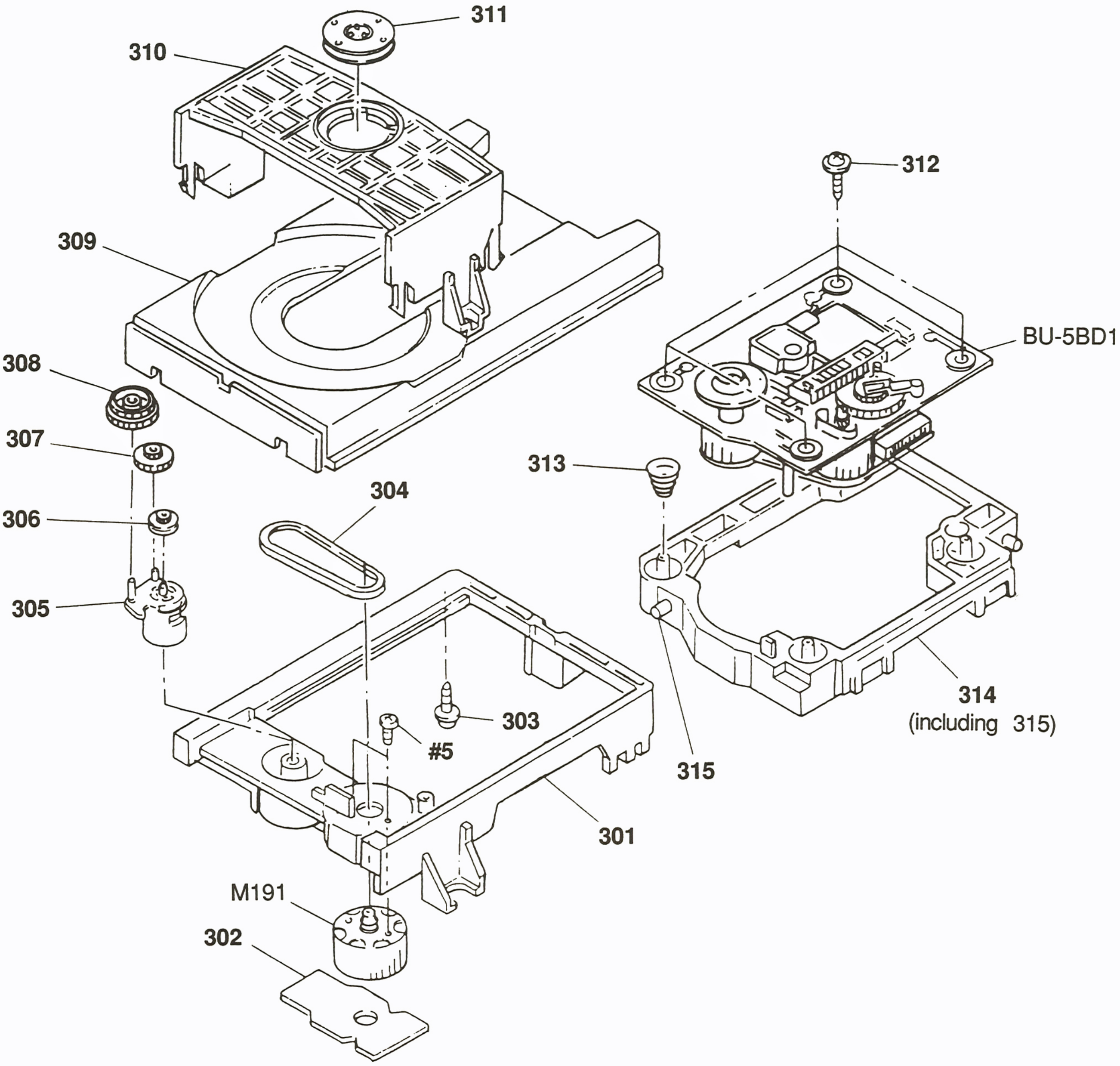


8
9
UK MODEL
10
AEP MODEL
10
E MODEL
10
11
Saudi Arabia MODEL
10
11
12
13
Australian MODEL
10
US, Canadian MODEL
10
T901
not supplied
#2
8
#1
#4
CDM14-5BD1
CN401
#3
20
14
7
3
#2
16
15
2
3
not supplied
5
19
21
not supplied
#2
18
17
not supplied
FLD401
not supplied
not supplied
#1
22
3
not supplied
23
1
4
23
24
not supplied
#1
#1
EXCEPT US, Canadian MODEL
6
FLD401 supplied with RV501
supplied with J501

Ref. No.	Part No.	Description	Remark
1	4-942-767-11	PLATE, INDICATION (195)	
1	4-942-767-01	PLATE, INDICATION (295/491)	
2	X-4941-260-1	PANEL ASSY, FRONT (MADE IN FRANCE 295:AEP)	
2	X-4941-262-1	PANEL ASSY, FRONT (MADE IN JAPAN 195:AEP, E, Saudi Arabia, Aastralian)	
2	X-4941-261-1	PANEL ASSY, FRONT (MADE IN JAPAN 195:US, Canadian)	
2	X-4941-263-1	PANEL ASSY, FRONT (MADE IN FRANCE 195:AEP)	
2	X-4941-259-1	PANEL ASSY, FRONT (MADE IN JAPAN 295:AEP, E, Australian)	
2	X-4941-258-1	PANEL ASSY, FRONT (MADE IN JAPAN 295:Canadian)	
2	X-4941-430-1	PANEL ASSY, FRONT (MADE IN JAPAN 491:US)	
2	X-4941-456-1	PANEL ASSY, FRONT (MADE IN FRANCE 491:UK)	
3	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
4	4-922-531-01	KNOB (A TYPE), LOV	
5	4-922-921-01	BUTTON (POWER)	
6	4-933-135-01	RING (DIA. 58A), ORNAMENTAL (EXCEPT US, Canadian)	
7	4-942-763-01	PAENL, LOADING (MADE IN JAPAN 295/491)	
7	4-942-763-11	PAENL, LOADING (MADE IN FRANCE 295:AEP/491:UK)	
7	4-942-763-21	PAENL, LOADING (MADE IN JAPAN 195)	
7	4-942-763-31	PAENL, LOADING (MADE IN FRANCE 195)	
8	3-704-366-01	SCREW (CASE) (M3X8)	
9	4-929-035-31	CASE (MADE IN JAPAN 195/295/491)	
9	4-929-035-41	CASE (MADE IN FRANCE 195/295/491)	
10 ⚠	1-574-390-31	CORD, POWER (491:UK)	
10 ⚠	1-574-653-21	CORD, POWER (E)	
10 ⚠	1-558-945-21	CORD, POWER (POLAR, SPT-1) (US, Canadian)	
10 ⚠	1-574-127-31	CORD, POWER (MADE IN FRANCE 195/295:AEP)	
10 ⚠	1-574-358-31	CORD, POWER (WITH CONNECTOR) (195/295:Australian)	
10 ⚠	1-575-651-21	CORD, POWER (MADE IN JAPAN AEP, Saudi Arabia)	
11 ⚠	1-569-007-11	ADAPTOR, CONVERSION 2P (195/295:E)	
11 ⚠	1-569-008-11	ADAPTOR, CONVERSION 2P (195:Saudi Arabia)	
12	* 3-703-244-00	BUSHING (2104), CORD (EXCEPT E, US, Canadian)	
12	* 3-703-571-12	BUSHING (S) (4516), CORD (E, US, Canadian)	
13	4-886-821-11	SCREW, S TIGHT, +PTTWH 3X6	
14	4-902-345-01	HEAT SINK	

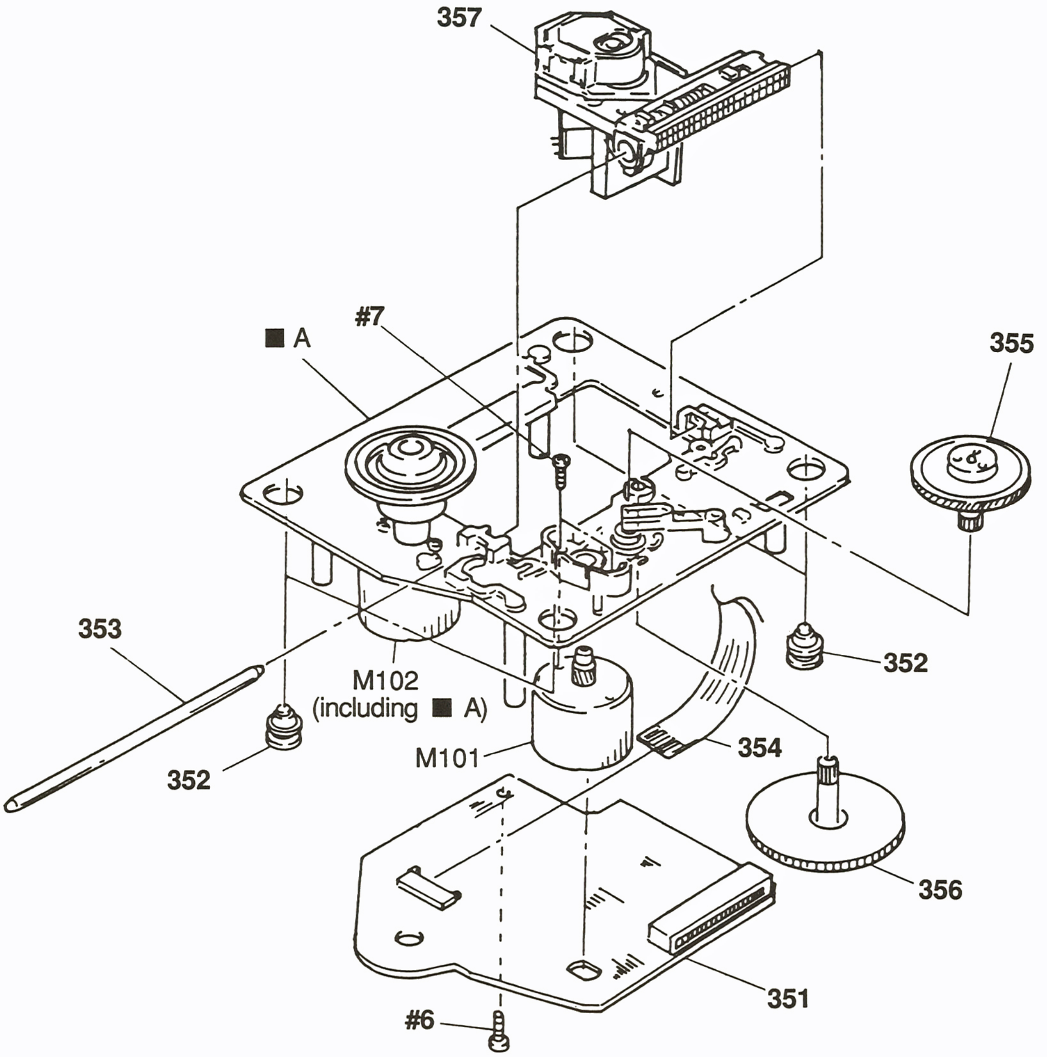
Ref. No.	Part No.	Description	Remark
15	* 4-942-769-21	PANEL, BACK (MADE IN JAPAN 295:AEP)	
15	* 4-942-770-21	PANEL, BACK (MADE IN JAPAN 195:AEP)	
15	* 4-942-770-41	PANEL, BACK (195:Australian)	
15	* 4-942-769-41	PANEL, BACK (295:Australian)	
15	* 4-942-770-31	PANEL, BACK (195:E, Saudi Arabia)	
15	* 4-942-769-11	PANEL, BACK (295:Canadian)	
15	* 4-942-770-11	PANEL, BACK (195:Canadian)	
15	* 4-942-769-02	PANEL, BACK (491:US)	
15	* 4-942-770-01	PANEL, BACK (195:US)	
15	* 4-942-769-31	PANEL, BACK (295:E)	
15	* 4-942-769-51	PANEL, BACK (MADE IN FRANCE 195, 295:AEP/491:UK)	
16	* A-4617-692-A	MAIN BOARD, COMPLETE (MADE IN FRANCE)	
16	* A-4617-706-A	MAIN BOARD, COMPLETE (MADE IN JAPAN AEP, US, Canadian, Australian)	
16	* A-4617-708-A	MAIN BOARD, COMPLETE (MADE IN JAPAN E, Saudi Arabia)	
17	* 3-349-025-41	HOLDER, PC BOARD	
18	* 4-924-098-01	HOLDER, PC BOARD	
19	* A-4617-713-A	DISPLAY BOARD, COMPLETE (MADE IN FRANCE)	
19	* A-4617-705-A	DISPLAY BOARD, COMPLETE (MADE IN JAPAN 195/295/491)	
20	1-575-002-11	WIRE, FLAT TYPE (22 CORE)	
21	* 1-637-906-11	POWER SW BOARD (MADE IN JAPAN)	
21	* 1-637-906-21	POWER SW BOARD (MADE IN FRANCE)	
22	X-3304-938-2	FOOT ASSY (EXCEPT US, Canadian)	
22	X-4885-950-2	FOOT ASSY (US, Canadian)	
23	4-923-836-11	CUSHION	
24	* 1-637-908-11	VOL BOARD (MADE IN JAPAN)	
24	* 1-637-908-21	VOL BOARD (MADE IN FRANCE)	
CN401	1-535-883-11	JUMPER, FILM (WITH TERMINAL)	
FLD401	1-519-611-11	INDICATOR TUBE, FLUORESCENT	
T901 ⚠	1-449-923-11	TRANSFORMER, POWER (E, Saudi Arabia)	
T901 ⚠	1-449-921-11	TRANSFORMER, POWER (US, Canadian)	
T901 ⚠	1-449-925-11	TRANSFORMER, POWER (MADE IN FRANCE AEP, UK)	
T901 ⚠	1-449-922-11	TRANSFORMER, POWER (MADE IN JAPAN AEP, Australian)	

(2) MD SECTION (CDM14-5BD1)


311
310
309
308
307
306
305
304
303
#5
312
BU-5BD1
313
314
(including 315)
315
301
M191
302

Ref. No.	Part No.	Description	Remark
301	4-933-111-01	CHASSIS (MD)	
302	* 1-632-202-11	LOADING BOARD	
303	* 4-917-583-21	BRACKET, YOKE	
304	4-927-649-01	BELT	
305	4-933-109-01	CAM	
306	4-927-651-01	PULLEY (S)	
307	4-927-628-01	GEAR (C)	
308	4-933-107-01	GEAR (PL)	
309	4-933-112-01	TABLE, DISK	
310	4-933-110-01	HOLDER (MG)	
311	* 1-452-538-11	MAGNET	
312	4-933-134-01	SCREW (+PTPWH M2.6X6)	
313	4-917-541-01	SPRING (B)	
314	4-933-129-01	HOLDER (BU) (INCLUDING 315)	
315	4-933-108-01	SHAFT (CAM)	
M191	A-4604-363-A	MOTOR (L) ASSY (LOADING)	

(3) PICK-UP BLOCK (BU-5BD1)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
351	A-4617-161-A	BD BOARD, COMPLETE	
352	4-933-126-01	INSULATOR (A)	
353	4-917-565-01	SHAFT, SLED	
354	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
355	4-917-567-01	GEAR (M)	
356	4-917-564-01	GEAR (P), FLATNESS	
357 ⚠	8-848-144-11	DEVICE, OPTICAL KSS-240A	
M101	X-4917-504-1	MOTOR ASSY (SLED)	
M102	X-4917-523-3	MOTOR ASSY (SPINDLE)	

SECTION 6
ELECTRICAL PARTS LIST

BD

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal Oxide-film resistor
  F : nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ, for example :
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF :μF
- COILS
  uH : μH
- Hardware(# mark) list is given in the last of this parts list.

Ref. No.	Part No.	Description				Remark
	A-4617-161-A	BD BOARD, COMPLETE ******************				
		< CAPACITOR >				
C101	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C102	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V	
C103	1-126-163-11	ELECT	4.7uF	20%	50V	
C104	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C105	1-126-154-11	ELECT	47uF	20%	6.3V	
C106	1-126-154-11	ELECT	47uF	20%	6.3V	
C107	1-126-154-11	ELECT	47uF	20%	6.3V	
C108	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C109	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C110	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V	
C111	1-131-367-00	TANTALUM	22uF	10%	20V	
C112	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C113	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C114	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V	
C115	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V	
C117	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C118	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C119	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V	
C120	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V	
C151	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V	
C152	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C153	1-163-006-11	CERAMIC CHIP	560PF	10%	50V	
C154	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V	
C155	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V	
C171	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C172	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C173	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C174	1-163-038-00	CERAMIC CHIP	0.1uF		25V	

Ref. No.	Part No.	Description				Remark
		< CONNECTOR >				
CN101	1-568-796-11	SOCKET, CONNECTOR 22P				
CN102	1-568-795-11	SOCKET, CONNECTOR 12P				
CN103	* 1-564-721-11	PIN, CONNECTOR (SMALL TYPE) 5P				
		< DIODE >				
D101	8-719-105-72	DIODE RD4.7M-B1				
		< IC >				
IC101	8-752-050-82	IC SC CXA1372Q				
IC102	8-759-822-36	IC LA6532M				
IC103	8-759-633-65	IC M54641L				
		< JUMPER >				
J101	1-216-295-00	METAL CHIP	0	5%	1/10W	
J102	1-216-295-00	METAL CHIP	0	5%	1/10W	
		< TRANSISTOR >				
Q101	8-729-901-01	TRANSISTOR DTC144EK				
		< RESISTOR >				
R101	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R102	1-216-095-00	METAL CHIP	82K	5%	1/10W	
R103	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R104	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R105	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R106	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R107	1-216-114-00	METAL GLAZE	510K	5%	1/10W	
R108	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R109	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R110	1-216-049-00	METAL CHIP	1K	5%	1/10W	

Ref. No.	Part No.	Description			Remark
R111	1-216-049-00	METAL CHIP	1K	5%	1/10W
R112	1-216-083-00	METAL CHIP	27K	5%	1/10W
R113	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R114	1-216-105-00	METAL CHIP	220K	5%	1/10W
R152	1-216-073-00	METAL CHIP	10K	5%	1/10W
R153	1-216-085-00	METAL CHIP	33K	5%	1/10W
R154	1-216-085-00	METAL CHIP	33K	5%	1/10W
R155	1-216-093-00	METAL CHIP	68K	5%	1/10W
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W
R157	1-216-079-00	METAL CHIP	18K	5%	1/10W
R158	1-216-079-00	METAL CHIP	18K	5%	1/10W
R159	1-216-079-00	METAL CHIP	18K	5%	1/10W
R160	1-216-049-00	METAL CHIP	1K	5%	1/10W
R171	1-216-001-00	METAL CHIP	10	5%	1/10W
R172	1-216-001-00	METAL CHIP	10	5%	1/10W
R173	1-216-001-00	METAL CHIP	10	5%	1/10W
R174	1-216-001-00	METAL CHIP	10	5%	1/10W
		< VARIABLE RESISTOR >			
RV101	1-238-016-11	RES, ADJ, CARBON 10K (TRACKING GAIN)			
RV102	1-238-016-11	RES, ADJ, CARBON 10K (FOCUS GAIN)			
		< SWITCH >			
S101	1-572-085-11	SWITCH, LEAF (LIMIT IN)			
***					
	* A-4617-705-A	DISPLAY BOARD, COMPLETE(MADE IN JAPAN)			
	* A-4617-713-A	DISPLAY BOARD, COMPLETE (MADE IN FRANCE)			
		**************************************			
	4-944-482-11	SPACER (75X7)			
		< CAPACITOR >			
C401	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C402	1-124-261-00	ELECT	10uF	20%	50V
C403	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C404	1-124-261-00	ELECT	10uF	20%	50V
		< CONNECTOR >			
CN401	1-535-883-11	JUMPER, FILM (WITH TERMINAL)			
		< INDICATOR FLUORESCENT >			
FLD401	1-519-611-11	INDICATOR TUBE, FLUORESCENT			

Ref. No.	Part No.	Description			Remark
		< IC >			
IC401	8-752-817-41	IC CXP50112-097Q			
IC402	8-749-920-83	IC GP1U52XB			
		< RESISTOR >			
R402	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R403	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R404	1-216-079-00	METAL CHIP	18K	5%	1/10W
R405	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R406	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R407	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R408	1-216-079-00	METAL CHIP	18K	5%	1/10W
R409	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R410	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R411	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R412	1-216-079-00	METAL CHIP	18K	5%	1/10W
R413	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R414	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R415	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R416	1-216-079-00	METAL CHIP	18K	5%	1/10W
R417	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R418	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R419	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R420	1-216-079-00	METAL CHIP	18K	5%	1/10W
R421	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R422	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R423	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R424	1-216-079-00	METAL CHIP	18K	5%	1/10W
R425	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R426	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R427	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R428	1-216-073-00	METAL CHIP	10K	5%	1/10W
R429	1-216-073-00	METAL CHIP	10K	5%	1/10W
R430	1-216-073-00	METAL CHIP	10K	5%	1/10W
R431	1-216-073-00	METAL CHIP	10K	5%	1/10W
R432	1-216-073-00	METAL CHIP	10K	5%	1/10W
R433	1-216-073-00	METAL CHIP	10K	5%	1/10W
R434	1-216-079-00	METAL CHIP	18K	5%	1/10W
R435	1-216-079-00	METAL CHIP	18K	5%	1/10W
		< SWITCH > (MADE IN JAPAN)			
S401	1-554-303-81	SWITCH, KEY BOARD (1)			
S402	1-554-303-81	SWITCH, KEY BOARD (2)			
S403	1-554-303-81	SWITCH, KEY BOARD (3)			
S404	1-554-303-81	SWITCH, KEY BOARD (4)			
S405	1-554-303-81	SWITCH, KEY BOARD (5)			

When indicating parts by reference number, please include the board name.

DISP LOADING MAIN

Ref. No.	Part No.	Description	Remark
S406	1-554-303-81	SWITCH, KEY BOARD (6)	
S407	1-554-303-81	SWITCH, KEY BOARD (7)	
S408	1-554-303-81	SWITCH, KEY BOARD (8)	
S409	1-554-303-81	SWITCH, KEY BOARD (9)	
S410	1-554-303-81	SWITCH, KEY BOARD (10)	
S411	1-554-303-81	SWITCH, KEY BOARD (11)	
S412	1-554-303-81	SWITCH, KEY BOARD (12)	
S413	1-554-303-81	SWITCH, KEY BOARD (>12)	
S414	1-554-303-81	SWITCH, KEY BOARD (MUSIC SCAN)	
S415	1-554-303-81	SWITCH, KEY BOARD (PEAK SEARCH)	
S416	1-554-303-81	SWITCH, KEY BOARD (CONTINUE)	
S417	1-554-303-81	SWITCH, KEY BOARD (SHUFFLE)	
S419	1-554-303-81	SWITCH, KEY BOARD (EDIT/TIME FADE)	
S420	1-554-303-81	SWITCH, KEY BOARD (▶▶❚, ▶▶)	
S421	1-554-303-81	SWITCH, KEY BOARD (❚◀◀, ◀◀)	
S422	1-554-303-81	SWITCH, KEY BOARD (■)	
S423	1-554-303-81	SWITCH, KEY BOARD (❚❚)	
S424	1-554-303-81	SWITCH, KEY BOARD (▶)	
S425	1-554-303-81	SWITCH, KEY BOARD (OPEN/CLOSE⏏)	
S426	1-554-303-81	SWITCH, KEY BOARD (CHECK)	
S427	1-554-303-81	SWITCH, KEY BOARD (CLEAR)	
S428	1-554-303-81	SWITCH, KEY BOARD (TIMER)	
S429	1-554-303-81	SWITCH, KEY BOARD (REPEAT)	
S430	1-554-303-81	SWITCH, KEY BOARD (FADER)	
S718	1-554-303-81	SWITCH, KEY BOARD (PROGRAM)	

< SWITCH > (MADE IN FRANCE)

Ref. No.	Part No.	Description	Remark
S401	1-554-303-52	SWITCH, KEY BOARD (1)	
S402	1-554-303-52	SWITCH, KEY BOARD (2)	
S403	1-554-303-52	SWITCH, KEY BOARD (3)	
S404	1-554-303-52	SWITCH, KEY BOARD (4)	
S405	1-554-303-52	SWITCH, KEY BOARD (5)	
S406	1-554-303-52	SWITCH, KEY BOARD (6)	
S407	1-554-303-52	SWITCH, KEY BOARD (7)	
S408	1-554-303-52	SWITCH, KEY BOARD (8)	
S409	1-554-303-52	SWITCH, KEY BOARD (9)	
S410	1-554-303-52	SWITCH, KEY BOARD (10)	
S411	1-554-303-52	SWITCH, KEY BOARD (11)	
S412	1-554-303-52	SWITCH, KEY BOARD (12)	
S413	1-554-303-52	SWITCH, KEY BOARD (>12)	
S414	1-554-303-52	SWITCH, KEY BOARD (MUSIC SCAN)	
S415	1-554-303-52	SWITCH, KEY BOARD (PEAK SEARCH)	
S416	1-554-303-52	SWITCH, KEY BOARD (CONTINUE)	
S417	1-554-303-52	SWITCH, KEY BOARD (SHUFFLE)	
S419	1-554-303-52	SWITCH, KEY BOARD (EDIT/TIME FADE)	
S420	1-554-303-52	SWITCH, KEY BOARD (▶▶❚, ▶▶)	
S421	1-554-303-52	SWITCH, KEY BOARD (❚◀◀, ◀◀)	
S422	1-554-303-52	SWITCH, KEY BOARD (■)	
S423	1-554-303-52	SWITCH, KEY BOARD (❚❚)	
S424	1-554-303-52	SWITCH, KEY BOARD (▶)	
S425	1-554-303-52	SWITCH, KEY BOARD (OPEN/CLOSE⏏)	
S426	1-554-303-52	SWITCH, KEY BOARD (CHECK)	
S427	1-554-303-52	SWITCH, KEY BOARD (CLEAR)	
S428	1-554-303-52	SWITCH, KEY BOARD (TIMER)	
S429	1-554-303-52	SWITCH, KEY BOARD (REPEAT)	
S430	1-554-303-52	SWITCH, KEY BOARD (FADER)	
S718	1-554-303-52	SWITCH, KEY BOARD (PROGRAM)	

< CRYSTAL >

Ref. No.	Part No.	Description	Remark
X401	1-577-358-21	VIBRATOR, CERAMIC (4MHz)	

****

* 1-632-202-11 LOADING BOARD
****

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN301	* 1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S191	1-572-086-11	SWITCH, LEAF (LOAD OUT)	
S192	1-572-086-11	SWITCH, LEAF (LOAD IN)	

****

* A-4617-692-A MAIN BOARD, COMPLETE (MADE IN FRANCE AEP, UK)
* A-4617-706-A MAIN BOARD, COMPLETE (MADE IN JAPAN: AEP, US, Canadian, Australian)
* A-4617-708-A MAIN BOARD, COMPLETE (MADE IN JAPAN: E, Saudi Arabia)
****

Ref. No.	Part No.	Description	Remark
	4-902-345-01	HEAT SINK	
	7-682-547-09	SCREW +B 3X6	

< CAPACITOR >

Ref. No.	Part No.	Description				Remark
C201	1-124-572-11	ELECT	100uF	20%	63V	
C202	1-123-875-11	ELECT	10uF	20%	50V	
C203	1-124-360-00	ELECT	1000uF	20%	16V	
C204	1-124-898-11	ELECT	4700uF	20%	16V	
C205	1-124-927-11	ELECT	4.7uF	20%	100V	
C206	1-123-875-11	ELECT	10uF	20%	50V	
C207	1-123-875-11	ELECT	10uF	20%	50V	
C208	1-124-472-11	ELECT	470uF	20%	10V	
C209	1-124-472-11	ELECT	470uF	20%	10V	
C210	1-124-120-11	ELECT	220uF	20%	25V	

When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description			Remark
C211	1-124-472-11	ELECT	470uF	20%	10V
C212	1-124-472-11	ELECT	470uF	20%	10V
C221	1-164-159-11	CERAMIC	0.1uF		50V
C301	1-124-477-11	ELECT	47uF	20%	25V
C302	1-124-791-11	ELECT	1.0uF	20%	100V
C311	1-106-383-00	MYLAR	0.047uF	5%	200V
C312	1-161-374-11	CERAMIC	0.0015uF	20%	50V
C313	1-161-494-00	CERAMIC	0.022uF		25V
C314	1-162-306-11	CERAMIC	0.01uF	20%	16V
C315	1-124-902-00	ELECT	0.47uF	20%	50V
C316	1-161-494-00	CERAMIC	0.022uF		25V
C317	1-164-159-11	CERAMIC	0.1uF		50V
C321	1-161-494-00	CERAMIC	0.022uF		25V
C331	1-162-208-31	CERAMIC	24PF	5%	50V
C332	1-106-220-00	MYLAR	0.1uF	5%	100V
C333	1-161-494-00	CERAMIC	0.022uF		25V
C335	1-162-205-31	CERAMIC	18PF	5%	50V
C341	1-161-494-00	CERAMIC	0.022uF		25V
C342	1-124-477-11	ELECT	47uF	20%	25V
C343	1-161-494-00	CERAMIC	0.022uF		25V
C344	1-161-494-00	CERAMIC	0.022uF		25V
C345	1-124-477-11	ELECT	47uF	20%	25V
C346	1-164-159-11	CERAMIC	0.1uF		50V
C347	1-124-477-11	ELECT	47uF	20%	25V
C348	1-164-159-11	CERAMIC	0.1uF		50V
C349	1-161-494-00	CERAMIC	0.022uF		25V
C350	1-124-477-11	ELECT	47uF	20%	25V
C351	1-161-494-00	CERAMIC	0.022uF		25V
C352	1-124-477-11	ELECT	47uF	20%	25V
C353	1-162-199-31	CERAMIC	10PF	5%	50V
C354	1-162-199-31	CERAMIC	10PF	5%	50V
C355	1-161-494-00	CERAMIC	0.022uF		25V
C356	1-124-477-11	ELECT	47uF	20%	25V
C357	1-124-472-11	ELECT	470uF	20%	10V
C361	1-162-285-31	CERAMIC	180PF	10%	50V
C362	1-162-285-31	CERAMIC	180PF	10%	50V
C363	1-162-283-31	CERAMIC	120PF	10%	50V
C364	1-162-283-31	CERAMIC	120PF	10%	50V
C365	1-162-283-31	CERAMIC	120PF	10%	50V
C366	1-162-283-31	CERAMIC	120PF	10%	50V
C367	1-161-494-00	CERAMIC	0.022uF		25V
C368	1-161-494-00	CERAMIC	0.022uF		25V
C371	1-106-359-00	MYLAR	4700PF	5%	200V
C372	1-106-359-00	MYLAR	4700PF	5%	200V
C373	1-106-345-00	MYLAR	0.0012uF	5%	100V
C374	1-106-345-00	MYLAR	0.0012uF	5%	100V
C375	1-161-494-00	CERAMIC	0.022uF		25V
C376	1-161-494-00	CERAMIC	0.022uF		25V
C377	1-124-477-11	ELECT	47uF	20%	25V

Ref. No.	Part No.	Description			Remark
C378	1-124-477-11	ELECT	47uF	20%	25V
C379	1-106-349-00	MYLAR	0.0018uF	5%	100V
C380	1-106-349-00	MYLAR	0.0018uF	5%	100V
C392	1-164-159-11	CERAMIC	0.1uF		50V
C394	1-164-159-11	CERAMIC	0.1uF		50V
		< CONNECTOR >			
CN201	* 1-580-230-11	PIN, CONNECTOR (PC BOARD) 3P			
CN301	* 1-568-843-11	SOCKET, CONNECTOR 28P			
CN302	* 1-568-822-11	SOCKET, CONNECTOR 22P			
CN381	* 1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P			
		< DIODE >			
D201	8-719-200-82	DIODE 11ES2			
D202	8-719-109-96	DIODE RD6.8ES-T1B			
D203	8-719-200-82	DIODE 11ES2			
D204	8-719-200-82	DIODE 11ES2			
D205	8-719-200-82	DIODE 11ES2			
D206	8-719-200-82	DIODE 11ES2			
D207	8-719-114-49	DIODE RD7.5JS-T1B2			
D208	8-719-109-89	DIODE RD5.6ES-B2			
D209	8-719-107-94	DIODE 1SS202-1 (MADE IN FRANCE)			
D209	8-719-987-63	DIODE 1N4148M (MADE IN JAPAN)			
D341	8-719-210-21	DIODE 11EQS04			
D351	8-719-107-94	DIODE 1SS202-1 (MADE IN FRANCE)			
D351	8-719-987-63	DIODE 1N4148M (MADE IN JAPAN)			
		< IC >			
IC201	8-759-633-42	IC M5293L			
IC202	8-759-630-21	IC M5290P-16			
IC203	8-759-945-58	IC RC4558P			
IC301	8-752-337-26	IC CXD2500AQ			
IC302	8-752-337-09	IC CXD2554P			
IC303	8-759-917-18	IC SN74HCU04AN			
IC305	8-752-334-87	IC CXD2552Q			
IC306	8-759-990-82	IC TL082CP			
IC307	8-759-945-58	IC RC4558P			
		< JACK >			
J381	1-569-442-11	JACK, PIN 2P (LINE OUT)			
		< COIL >			
L331	1-408-403-00	INDUCTOR 3.3uH			
		< IC LINK >			
PS201⚠	1-532-685-00	LINK, IC (ICP-N20)			
PS202⚠	1-532-637-00	LINK, IC 1.0A (ICP-N25)			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

MAIN

POWER SW

< TRANSISTOR >

Ref. No.	Part No.	Description				Remark
Q201	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q202	8-729-140-96	TRANSISTOR 2SD774-34				
Q203	8-729-111-67	TRANSISTOR 2SB1094-L				
Q204	8-729-900-65	TRANSISTOR DTA144ES				
Q205	8-729-900-89	TRANSISTOR DTC144ES				
Q206	8-729-900-89	TRANSISTOR DTC144ES				
Q207	8-729-230-45	TRANSISTOR 2SC2458-YGR				
Q208	8-729-821-73	TRANSISTOR 2SB1274SA-RS				
Q209	8-729-281-52	TRANSISTOR 2SC1815Y-Y				
Q343	8-729-900-65	TRANSISTOR DTA144ES				
Q344	8-729-900-89	TRANSISTOR DTC144ES				
Q371	8-729-141-30	TRANSISTOR 2SC3623A-LK				
Q372	8-729-141-30	TRANSISTOR 2SC3623A-LK				
Q373	8-729-141-30	TRANSISTOR 2SC3623A-LK				
Q374	8-729-141-30	TRANSISTOR 2SC3623A-LK				

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R201	1-249-435-11	CARBON	33K	5%	1/4W	
R202	1-249-438-11	CARBON	56K	5%	1/4W	
R203	1-249-429-11	CARBON	10K	5%	1/4W	
R204	1-249-425-11	CARBON	4. 7K	5%	1/4W	
R205	1-249-425-11	CARBON	4. 7K	5%	1/4W	
R206	1-249-417-11	CARBON	1K	5%	1/4W	
R207	1-249-417-11	CARBON	1K	5%	1/4W	
R208	1-249-423-11	CARBON	3. 3K	5%	1/4W	
R209	1-249-413-11	CARBON	470	5%	1/4W	
R210	1-249-429-11	CARBON	10K	5%	1/4W	
R211	1-249-410-11	CARBON	270	5%	1/4W	
R214	1-249-417-11	CARBON	1K	5%	1/4W	
R301	1-249-421-11	CARBON	2. 2K	5%	1/4W	
R302	1-249-421-11	CARBON	2. 2K	5%	1/4W	
R303	1-249-421-11	CARBON	2. 2K	5%	1/4W	
R304	1-249-421-11	CARBON	2. 2K	5%	1/4W	
R311	1-249-423-11	CARBON	3. 3K	5%	1/4W	
R312	1-249-429-11	CARBON	10K	5%	1/4W	
R313	1-249-423-11	CARBON	3. 3K	5%	1/4W	
R314	1-249-429-11	CARBON	10K	5%	1/4W	
R315	1-249-417-11	CARBON	1K	5%	1/4W	
R316	1-249-417-11	CARBON	1K	5%	1/4W	
R317	1-249-420-11	CARBON	1. 8K	5%	1/4W	
R318	1-249-441-11	CARBON	100K	5%	1/4W	
R321	1-249-417-11	CARBON	1K	5%	1/4W	
R322	1-249-417-11	CARBON	1K	5%	1/4W	
R323	1-249-417-11	CARBON	1K	5%	1/4W	
R324	1-249-418-11	CARBON	1. 2K	5%	1/4W	
R331	1-249-409-11	CARBON	220	5%	1/4W	
R332	1-247-887-00	CARBON	220K	5%	1/4W	
R333	1-249-417-11	CARBON	1K	5%	1/4W	
R334	1-249-409-11	CARBON	220	5%	1/4W	
R341	1-249-393-11	CARBON	10	5%	1/4W	
R342	1-249-417-11	CARBON	1K	5%	1/4W	
R347	1-249-441-11	CARBON	100K	5%	1/4W	
R348	1-249-429-11	CARBON	10K	5%	1/4W	
R351	1-249-429-11	CARBON	10K	5%	1/4W	
R352	1-249-429-11	CARBON	10K	5%	1/4W	
R353	1-249-429-11	CARBON	10K	5%	1/4W	
R354	1-249-429-11	CARBON	10K	5%	1/4W	
R355	1-247-848-11	CARBON	5. 1K	5%	1/4W	
R356	1-249-405-11	CARBON	100	5%	1/4W	
R361	1-247-838-00	CARBON	2K	5%	1/4W	
R362	1-247-838-00	CARBON	2K	5%	1/4W	
R363	1-247-838-00	CARBON	2K	5%	1/4W	
R364	1-247-838-00	CARBON	2K	5%	1/4W	
R365	1-249-432-11	CARBON	18K	5%	1/4W	
R366	1-249-432-11	CARBON	18K	5%	1/4W	
R367	1-249-432-11	CARBON	18K	5%	1/4W	
R368	1-249-432-11	CARBON	18K	5%	1/4W	
R369	1-249-419-11	CARBON	1. 5K	5%	1/4W	
R370	1-249-419-11	CARBON	1. 5K	5%	1/4W	
R371	1-249-419-11	CARBON	1. 5K	5%	1/4W	
R372	1-249-419-11	CARBON	1. 5K	5%	1/4W	
R373	1-247-887-00	CARBON	220K	5%	1/4W	
R374	1-247-887-00	CARBON	220K	5%	1/4W	
R375	1-249-409-11	CARBON	220	5%	1/4W	
R376	1-249-409-11	CARBON	220	5%	1/4W	
R377	1-249-409-11	CARBON	220	5%	1/4W	
R378	1-249-409-11	CARBON	220	5%	1/4W	
R379	1-249-425-11	CARBON	4. 7K	5%	1/4W	
R380	1-249-425-11	CARBON	4. 7K	5%	1/4W	
R381	1-249-425-11	CARBON	4. 7K	5%	1/4W	
R382	1-249-425-11	CARBON	4. 7K	5%	1/4W	
R383	1-249-414-11	CARBON	560	5%	1/4W	
R384	1-249-414-11	CARBON	560	5%	1/4W	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S201 ⚠	1-571-722-11	SWITCH, VOLTAGE SELECTION	(E, Saudi Arabia)

< CRYSTAL >

Ref. No.	Part No.	Description	Remark
X351	1-579-161-11	VIBRATOR, CRYSTAL (45MHz)	

****

* 1-637-906-11 POWER SW BOARD (MADE IN JAPAN)
* 1-637-906-21 POWER SW BOARD (MADE IN FRANCE)

****

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref. No.		Part No.	Description	Remark

< CONNECTOR >

Ref. No.		Part No.	Description	Remark
CN491	*	1-568-953-11	PIN, CONNECTOR 4P	

< SWITCH >

Ref. No.		Part No.	Description	Remark
S491		1-554-118-00	SWITCH, PUSH (1 KEY) (POWER)	

****

Ref. No.		Part No.	Description	Remark
	*	1-637-908-11	VOL BOARD (MADE IN JAPAN)	
	*	1-637-908-21	VOL BOARD (MADE IN FRANCE)	

****

< CAPACITOR >

Ref. No.	Part No.	Description	Value	Tolerance	Rating
C510	1-124-584-00	ELECT	100uF	20%	10V
C511	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C520	1-124-584-00	ELECT	100uF	20%	10V
C521	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C530	1-163-038-00	CERAMIC CHIP	0.1uF		25V

< CONNECTOR >

Ref. No.		Part No.	Description	Remark
CN501	*	1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P	

< IC >

Ref. No.	Part No.	Description	Remark
IC501	8-759-981-89	IC RC4556S	

< JACK >

Ref. No.	Part No.	Description	Remark
J501	1-568-519-41	JACK, LARGE TYPE (PHONES)	

< COIL >

Ref. No.	Part No.	Description	Remark
L501	1-424-090-11	COIL, LINE FILTER	
L511	1-424-090-11	COIL, LINE FILTER	
L521	1-424-090-11	COIL, LINE FILTER	

< RESISTOR >

Ref. No.	Part No.	Description	Value	Tolerance	Rating
R510	1-216-049-00	METAL CHIP	1K	5%	1/10W
R511	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R512	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R513	1-216-025-00	METAL CHIP	100	5%	1/10W
R520	1-216-049-00	METAL CHIP	1K	5%	1/10W
R521	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R522	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R523	1-216-025-00	METAL CHIP	100	5%	1/10W

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV501	1-241-386-11	RES, VAR, CARBON 20K/20K (LEVEL)	

MISCELLANEOUS
****

Ref. No.		Part No.	Description	Remark
10	⚠	1-558-945-21	CORD, POWER (POLAR, SPT-1) (US, Canadian)	
10	⚠	1-574-127-31	CORD, POWER (MADE IN FRANCE 195/295:AEP)	
10	⚠	1-574-358-31	CORD, POWER (WITH CONNECTOR)	
10	⚠	1-574-390-31	CORD, POWER (491:UK)	
10	⚠	1-574-653-21	CORD, POWER (E)	
10	⚠	1-575-651-21	CORD, POWER (MADE IN JAPAN	
11	⚠	1-569-007-11	ADAPTOR, CONVERSION 2P (195/295:E)	
11	⚠	1-569-008-11	ADAPTOR, CONVERSION 2P	
20		1-575-002-11	WIRE, FLAT TYPE (22 CORE)	
21	*	1-637-906-11	POWER SW BOARD (MADE IN JAPAN)	
21	*	1-637-906-21	POWER SW BOARD (MADE IN FRANCE)	
24	*	1-637-908-11	VOL BOARD (MADE IN JAPAN)	
24	*	1-637-908-21	VOL BOARD (MADE IN FRANCE)	
311	*	1-452-538-11	MAGNET	
354		1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
357	⚠	8-848-144-11	DEVICE, OPTICAL KSS-240A	

Ref. No.		Part No.	Description	Remark
CN401		1-535-883-11	JUMPER, FILM (WITH TERMINAL)	
FLD401		1-519-611-11	INDICATOR TUBE, FLURESCENT	
M101		X-4917-504-1	MOTOR ASSY (SLED)	
M102		X-4917-523-3	MOTOR ASSY (SPINDLE)	
M191		A-4604-363-A	MOTOR (L) ASSY (LOADING)	
T901	⚠	1-449-921-11	TRANSFORMER, POWER (US, Canadian)	
T901	⚠	1-449-922-11	TRANSFORMER, POWER (MADE IN JAPAN AEP, Australian)	
T901	⚠	1-449-923-11	TRANSFORMER, POWER (E, Saudi Arabia)	
T901	⚠	1-449-925-11	TRANSFORMER, POWER (MADE IN FRANCE AEP, UK)	

****

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description	Remark
		ACCESSORY & PACKING MATERIAL	
	1-465-635-11	COMMANDER, REMOTE (RM-D295) (MADE IN JAPAN 295/491)	
	1-465-635-21	COMMANDER, REMOTE (RM-D295) (MADE IN FRANCE 295/491)	
	1-558-271-11	CORD, CONNECTION	
	2-181-754-01	COVER (MLY), BATTERY (295/491)	
*	3-750-090-01	INSTRUCTION (MADE IN JAPAN 195:AEP, Canadian/295:Canadian)	
*	3-795-629-15	INSTRUCTION (MADE IN JAPAN 295:AEP)	
	3-752-961-11	MANUAL, INSTRUCTION (ENGLISH, F, E, P) (MADE IN JAPAN 295)	
	3-752-961-21	MANUAL, INSTRUCTION (ENGLISH) (MADE IN JAPAN 491:US)	
	3-752-961-41	MANUAL, INSTRUCTION (D, NL, S, I) (MADE IN JAPAN 295:AEP)	
	3-752-961-51	MANUAL, INSTRUCTION (ENGLISH, F, E, P) (MADE IN FRANCE 295:AEP/491:UK)	
	3-752-961-61	MANUAL, INSTRUCTION (D, NL, S, I) (MADE IN FRANCE 295:AEP)	
	3-752-962-11	MANUAL, INSTRUCTION (ENGLISH, F, E, P) (MADE IN JAPAN 195:AEP, E, Canadian, Saudi Arabia)	
	3-752-962-21	MANUAL, INSTRUCTION (ENGLISH) (MADE IN JAPAN 195:US)	
	3-752-962-51	MANUAL, INSTRUCTION (ENGLISH, F, E, P) (MADE IN FRANCE 195:AEP)	
	3-752-962-41	MANUAL, INSTRUCTION (D, NL, S, I) (MADE IN JAPAN 195:AEP)	
	3-752-962-61	MANUAL, INSTRUCTION (D, NL, S, I) (MADE IN FRANCE 195:AEP)	
*	4-925-389-01	CUSHION (MADE IN JAPAN 195/295/491)	
*	4-929-506-02	CUSHION (MADE IN FRANCE 195/295/491)	
*	4-941-548-01	LABEL, CLASS 1 (EXCEPT US, Canadian)	
*	4-939-718-41	INDIVIDUAL CARTON (MADE IN JAPAN 295)	
*	4-939-718-51	INDIVIDUAL CARTON (MADE IN JAPAN 491)	
*	4-939-718-61	INDIVIDUAL CARTON (MADE IN JAPAN 195)	
*	4-942-897-11	INDIVIDUAL CARTON (MADE IN FRANCE 295:AEP)	
*	4-942-897-21	INDIVIDUAL CARTON (MADE IN FRANCE 195:AEP)	
*	4-942-897-31	INDIVIDUAL CARTON (MADE IN FRANCE 491:UK)	

****

Ref. No.	Part No.	Description	Remark
		HARDWARE LIST	
# 1	7-682-548-09	SCREW +BVTT 3X8 (S)	
# 2	7-682-547-04	SCREW +BVTT 3X6 (S)	
# 3	7-682-547-09	SCREW +B 3X6	
# 4	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
# 5	7-621-775-10	SCREW +B 2.6X4	
# 6	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S	
# 7	7-621-255-15	SCREW +P 2X3	

D: GERMAN	F: FRENCH	NL: DUTCH	S: SWEDISH
E: SPANISH	I: ITALIAN	P: PORTUGUESE	

English
91C1996-1
Printed in Japan
© 1991.3

Sony Corporation
Audio Group

Published by Customer Relations and Service Group